DECEMBER, 1944

Industrial FINISHING

Published Monthly in the Interest of Product Cleaning and Finishing by Practical Publications, Inc., 1142 N. Meridian Street, Indianapolis 4, Ind.

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Manufacturers of Finishing Materials
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and
A Constructive Thought
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TWENTY-THIRD YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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Looking Ahead — What lies in store for the nation in the period immediately ahead, now that price and wage controls have been lifted? One thoughtful answer to this question, offered by Dr. Marcus A. Nadler, finance professor at the Graduate School of Business Administration, New York University, is that if a spiral between wages and prices continues, "the outlook is gloomy."

While pointing out that a boom-and-bust pattern would prove catastrophic for the country as a whole, Dr. Nadler sounded a note of conditional optimism about the nation's economic future. "If the business pattern in the immediate future is one of gradual readjustment, followed by a prolonged period of good business activity, then the outlook is favorable," he declared.

* * *

"Pessimistic Prosperity"—That's how the first 10 months of 1946 were characterized last month by the *Business Bulletin*, regular monthly publication of the Cleveland Trust Co., Cleveland, O., one of the leading banking firms.

The economic survey . . . . said that even though more people have been employed in civilian jobs during the past several months than ever before, "business sentiment has been predominantly gloomy, with much discussion on an expected recession or slump."

One explanation of the disagreement between business sentiment and business statistics, says the *Business Bulletin*, may be found in the fact that there has been a long, continued decline in the security market. But, the magazine adds, "It is still not clear whether or not necessary corrections of basic distortions in the economy can be made without subjecting the nation to the pains of a depression."

* * *

Auto Output is Barometer—Businessmen will keep an eagle-eye focused on the production figures of the automobile industry, as a gauge of our progress toward high-level peacetime production in estimating the probable trend of general business conditions, concludes this bank publication.

Even though "voluntary quits" among workers in manufacturing plants have been lower so far this year than in three previous years, "they have been far higher than they were in the prewar years." Pointing out that the voluntary quit rate now is five times as high as the average during the decade from 1931 through 1940, the Trust Co. *Bulletin* says this figure so far this year is slightly over 50 per 100 employees, and "has not been improving."

* * *

Old Machinery Dangerous—Warworn factory machinery and plant equipment are endangering the one thing most important to the indus-

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trial worker—his life—according to Edward S. Webb, National Safety Council official, who leveled this warning to all industry at a recent safety and fire conference of the synthetic rubber industry held in Washington, D. C.

Now that new and improved equipment is steadily becoming increasingly available, it might be well for any product-coating department or parts-finishing shop to conduct a "safety canvass" of its production facilities. Replace obsolescent units with those that provide safe operation and ease of handling; or repair those that are still in good, serviceable condition. This will cut down operational hazards. Such a check-up on degreasing machines, pickling equipment, paint spray installations, ventilating equipment, air compressors, polishing and buffing machines and other equipment units will result in greater worker safety and lower accident rates. It also may bring about greater operating efficiency and lower production costs.

* * *

Push-Button Farming — Electricity will replace hired hands on many of America's future farms, predicts George W. Kable, editor of the magazine *Electricity on the Farm*, who says that by 1951 most farms will be wired for electricity to run machines that will do the work now being performed by many hired hands.

* * *

Ups Output Despite Shortages—Shifting its production machine into high gear in less than eight months, the General Motors Harrison Radiator Division plant in Buffalo, N. Y., has stepped up daily output to 5300 auto heaters

and 4300 car defrosters in the face of copper, steel and carton shortages. Employment now totalling 1100 workers, is expected to reach approximately 1500 workers if the hoped-for gains in auto production are realized.

Having speedily converted all facilities of a former cable manufacturing plant from a wartime footing to a peacetime basis, Harrison is handling GM's full heater and defroster requirements, making virtually all the heaters and defrosters needed for GM cars and trucks.

* * *

Price Rise Control — John W. Love, economic analyst whose column appears regularly in many mid-western newspapers, says that production gains and savings are likely to control price rises. How high decontrolled prices will now go depends chiefly, he says, on these two things:

1) How much consumers confine their spending to current income, refusing to draw down their savings.

2) How quickly industry can restore its old productivity and keep it high.

"If, on the other hand, people decide in large numbers to use their savings to buy quickly the things they've wanted for a long time, even if the prices are higher than they expected to pay, and if new waves of strikes tie up important industries and keep goods scarce, then there's no guessing how high the price level will go.

"The degree of the rise in prices also depends on the extent to which manufacturers and merchants hold goods off the market in the belief that prices will be higher."

(Continued on page 110)

Spray on . . .
FILMITE
Peel off
OVERSPRAY
A non-drying film that prevents overspray from sticking to dry areas of paint spray booths.
Cuts 90% off booth cleaning man hours.
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Cleaning and Finishing A

Reynolds Metals' setup for conveyorized spray painting, followed by infra-red baking, as applied to a wide range of aluminum products which are finished in different colors.

BY TOM WINSHURST
Engineer with
Reynolds Metals Co.

BECAUSE OF our diversified line of aluminum products, involving numerous shapes and sizes, relivery to the finishing room from the various tanks and washers is made by conveyors, baskets and skid platforms. Obviously it is not possible to use one means of handling which would be economical for all types of products to be finished. For the same reason, after finishing is completed, these products are moved to the assembly department by various methods.

The simplicity of our finishing system produces flexibility and efficiency. The finishing conveyor is 366-ft. long and has a variable-speed range of from 3 to 18-ft. per minute. It carries products into the pressurized finishing room where we have two water-wash spray booths and an infra-red drying tunnel. Carriers on this conveyor are spaced on 24-in. centers. For some products, each carrier is used; for other products, such as table tops and leaves, because of their length, every other carrier is used.

The infra-red tunnel is 56-ft. long and consists of 14 movable banks of lights on each side. Each bank has 56/250-watt lamps. Auto transformers have been installed

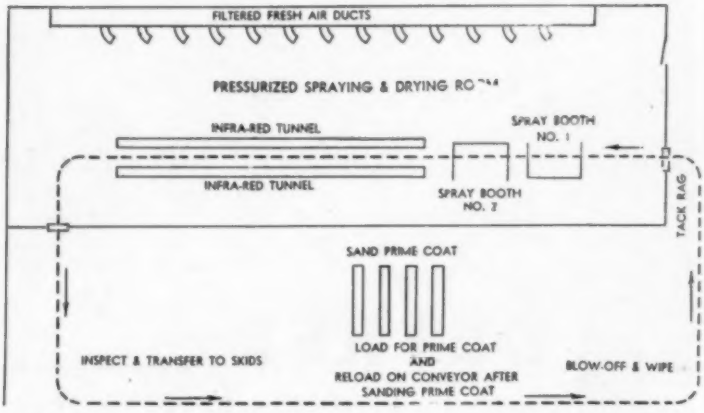
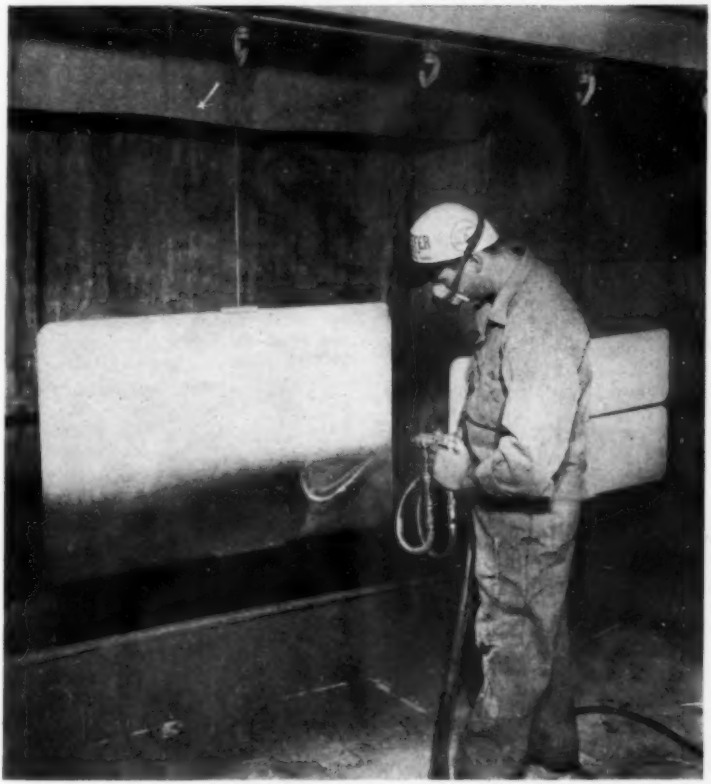

FILTERED FRESH AIR DUCTS
PRESSURIZED SPRAYING & DRYING RO
INFRA-RED TUNNEL
INFRA-RED TUNNEL
SPRAY BOOTH NO. 1
SPRAY BOOTH NO. 2
TACK RAG
SAND PRIME COAT
INSPECT & TRANSFER TO SKIDS
LOAD FOR PRIME COAT AND RELOAD ON CONVEYOR AFTER SANDING PRIME COAT
BLOW-OFF & WIPE

Fig. 1—Plan view of conveyor line, work station sand pressurized spraying-drying room.

so that voltage may be regulated to produce a uniform baking temperature over the entire surface of the many odd shaped articles, and also as a means of controlling temperatures on the various colors applied. Baking time is regulated by the speed of the conveyor.

Let us take, for example, the flat table tops and leaves made from .072-gauge sheet aluminum. These tops and leaves have been cut to size and shape, and washed in the flat sheet washer. (Later, after being finished, they are assembled over a wood frame core



Spraying the prime coat on aluminum flat sheets for table tops and leaves as they move along, by overhead conveyor through the water wash spray booth.

and are banded around the edges with extruded aluminum mouldings which hold them in place.)

Upon arrival in the finishing department, two table tops, or four table leaves (placed back to back) are suspended from the conveyor by means of a convenient rack. At a conveyor speed of 5½-ft. per minute, the aluminum tops and leaves receive a spray coat of synthetic enamel primer, followed by a 10-minute bake at 350° F. in the infra-red tunnel.

Sanding Primer; Cleaning; Spraying Top Coats; Baking

At the point indicated in Fig. 1, aluminum table tops and leaves are removed from the line, inspected and loaded onto skid platforms by which they are transferred to the sanding tables. The baked prime coat is sanded smooth with No 360-WOD (wet or dry) paper. Then the items are again hung on the conveyor. A blowing-off and wiping follows — and just before they enter the pressurized spraying and drying room they are tack-ragged. A top coat of red synthetic enamel is sprayed on in booths No. 1 and No. 2 — one coat in each booth.

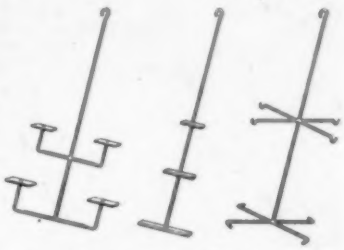
Those flat parts or products that must be finished on both sides are prime coated on one side in spray booth No. 1, and on the other side in spray booth No. 2. This saves turning them around in one booth to be prime coated on both sides. However, when they come around to receive their two top coats of enamel, an operator sprays both sides in each booth. In other words, one complete over-all coat of enamel is sprayed on in booth No. 1, and another of the same is sprayed over both sides in spray booth No. 2.

The two top coats are baked ten minutes at 350° F. The prime coat produces a thickness of .5 to .7 mills, and the two top coats 1.5 to 1.8 mills thickness, making a total finish thickness of 2 to 2.5 mills.

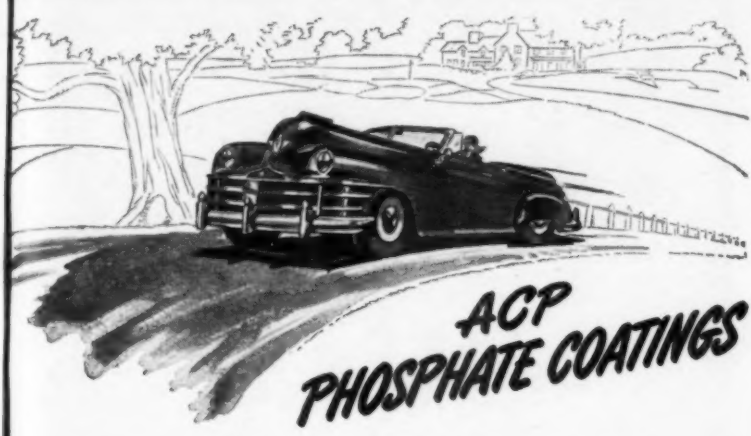
At the transfer point, finished tops and leaves are removed from the line, inspected, and loaded onto skid platforms. Soft paper protectors are placed between the finished sheets to prevent scratching the finished surfaces. Then they are delivered to the assembly department.

On home freeze shells, lids, sterilizer hoods, etc., which receive a white synthetic enamel finish, the conveyor speed is stepped up to between 9 and 12-ft. per minute, thereby reducing the baking period to between 4½ to 6 minutes, with an increased temperature of 375° F.

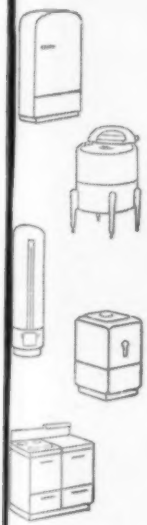
Special racks are designed and built for each product to be finished. To increase the productive capacity of the system, racks for items that receive an enamel finish on only one side are designed to hold two articles placed back to back. A combination rack can be used to hold either four sterilizer hoods or four smoker bases. Racks for home freeze shells, clothes



Some of the metal work-holders used in connection with overhead conveyors.



Positive Protection For Painted Metal Surfaces



ACP Phosphate Coatings produce an excellent paint-bonding surface on metal parts and provide a foundation for a lustrous and lasting finish. There are various types depending on the kind of metal, its condition and the purpose for which it is to be used as well as the equipment facilities of the manufacturer.

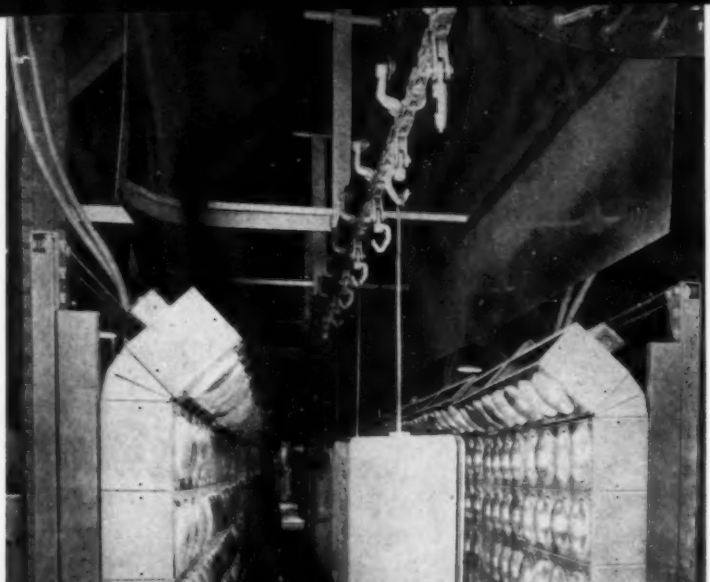
Cold **SPRAY-GRANODINE** in a short spray time forms a uniform, smooth, zinc phosphate coating — a superior base for lustrous, enduring paint finish. Cold Spray-Granodine is of special interest to fabricators of automobile bodies, fenders, refrigerators, cabinets and in general for proper preparation of sheet steel products for *durable, lustrous finishes.*

DURIDINE *simultaneously cleans and deposits a thin, tight, close-grained phosphate coating* on ferrous surfaces which provide the proper surface preparation for durable paint finish. The Duridine process is simple, economical and effective. Present spray washer installations of mild steel are adequate.

THERMOIL-GRANODINE used in an immersion process creates on steel an oil-absorbing, paint-bonding, crystalline coating of iron and manganese phosphate, integrated with the base metal. Treated surfaces, when oiled or painted, provide excellent protection against rust. Thermoil-Granodine furnishes excellent rust protection for tools, nuts, bolts and unpainted replacement machine parts.

ACP Technicians will gladly consult with you and recommend the products and processes which will most efficiently meet your requirements.

AMERICAN CHEMICAL PAINT CO.
AMBLER ACP PENNA.



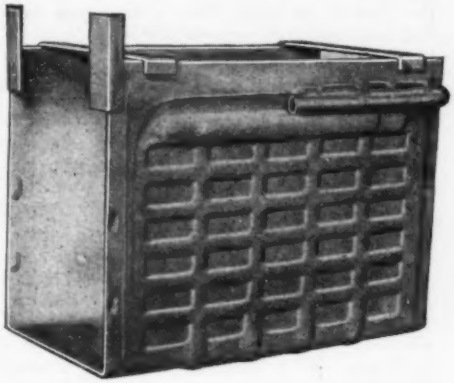
Prime coat and top coats are baked as the work moves through this infra-red tunnel which is adjustable for width to suit different size products.

hampers, frames for chairs and davenports, and other products are built for individual units — either because of the product's size and shape, or because the articles require a finish on two sides.

If you shake down the modern successful finishing room, to find out what makes it tick, you will find that the mainspring is the control laboratory. This is especially true where products that are new in size, shape or finish requirements, are being introduced from time to time. In our case the laboratory sets schedules to produce

REFRIGERATOR ICE CUBE COMPARTMENT MADE CORROSION RESISTANT WITH SILCO

GLASS-BASE SPRAY COAT FOR STEEL AND BRASS



This new baked finish, virtually liquid glass, has extremely high resistance to corrosion, abrasion and impact—making it an ideal protective finish for surfaces exposed to dampness, mild alkalis, gas fumes. As it also withstands heat up to 1000° F., it will materially increase the life of auto exhaust pipes and mufflers, blowers, unit heaters and similar articles. It may be had in soft eggshell matte finishes of ANY DESIRED COLOR. SILCO is also a decorative-type finish suitable for such items as electric irons, toasters, and has many other household and industrial uses where appearance and durability are prime factors.

Easy to work. SILCO comes all ready to use. No bother with thinners. No fire hazards or obnoxious odors. Spray it on and dry at 200° F., with a final cure at 350° F. in any industrial oven. Easily dovetailed into any finishing department or a perfect beginning for a new department in the important field of finishing.

BLACK MAGIC—A deep-penetrating, 1-bath oxide black that gives all steels except stainless a dense black that won't rub off. Very flexible; forming may follow processing. Also an effective rust inhibitor or bond for paint and lacquer. Chemical reaction at 300° F. There are also BLACK MAGIC baths for zinc, copper, brass and cadmium. Send for samples and the "Black Book."

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BLACK-MAGIC OXIDE BLACKING SALTS
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the desired results. Baking time and temperatures are determined by running sample pieces through the line with thermocouples (thermoelectric couple used to measure temperature differences) attached. Guesswork has no place in any finishing system if good results are to be permanently achieved.

Only Clean Filtered Air Enters Pressurized Finishing Room

Most plants, such as ours, are located in highly industrialized sections where smoke and dust abound. Added to this, our plant is located in a river valley over which heavy curtains of fog and smoke hang during the fall and winter months. All of this makes it necessary that we not only use filtered air, but that the room where the finish is applied and baked, be "pressurized". This room, as shown in floor plan in Fig. 1, is 40x120x15-ft., making a total of 72,000-cu.ft. It has factory sash on one end only, and one sliding door, all of which are kept tightly closed at all times. Adjustable air locks are installed where the conveyor enters and leaves the room. We use 100% fresh filtered air; that is, no inside air is recirculated.

The exhaust fans in the infrared tunnel exhaust 1000-cu. ft. of air per minute; the fans in the two water-wash spray booths, plus slight loss at air locks, exhaust 20,000-cu.ft. per minute, making a total volume of 21,000-cu.ft. of air exhausted per minute.

Outside air is brought into the room through 40 unit-type filters each measuring 20x20-in. Each filter has a rated capacity of 800-cu. ft. of air per minute. Water coils are located between the filters and the fan through which the air passes before it enters the duct system. In summer, deep well water is circulated in the coils to cool the air before it enters the finishing room. During the winter months, steam is circulated to prevent chilling the air in the room. Total input through the duct system is 26,000-cu.ft. per minute.

With the finishing room filled with clean air under more than normal pressure, any movement of air through possible leaks in roof, floor or walls, and through doors when one is opened, will necessarily be from the inside outward. As a result no dust, dirt or smoke is ever sucked into the finishing room. The finishing room looks clean, feels clean, and is clean — and only under these conditions is it possible to successfully apply and bake white finishes and pastel shades.

More White Pigment Coming

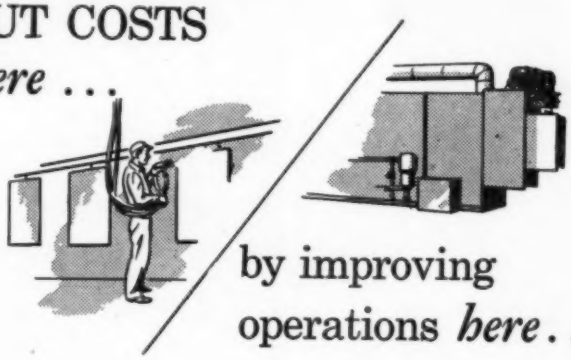
Plans for a new manufacturing unit at the Du Pont titanium dioxide plant at Edge Moor, Dela., are announced by the company's Pigments Department.

This unit is the second Du Pont titanium expansion to be started since the end of the war and the seventh major expansion in this field which the company has undertaken since it started the manufacture of titanium in 1931. Much of the equipment to be installed cannot be procured except under long-term delivery, so completion is not contemplated until some time in 1948.

Currently the plant's capacity is being increased through modification of existing equipment and processes. Completion of this phase of the expansion program is scheduled for next May.

The Edge Moor plant manufacturers titanium dioxide, a white pigment, used in paints, linoleum, lacquers, paper, leather, inks and rubber. This plant also produces titanium calcium pigment, which is used most widely in paints. The demand for these products has continued to run far ahead of existing manufacturing capacity.

Now you can
CUT COSTS
here . . .



by improving
operations *here* . . .

with Oakite CrysCoat Process

TRADE MARK REG. U. S. PAT. OFF.

PRODUCTION costs increase when rejects rise in finishing operations. To minimize finish failures caused by improper paint adhesion, flaking or rusting, condition ferrous surfaces the Oakite CrysCoat Way! This new, low-cost surface conditioning process:

1 Removes light soils, oils, spinning compounds.

2 Imparts a microscopic phosphate coating to give you a surface which paint will cover uniformly; grip firmly; stay put!

3 Inhibits rust before painting . . . localizes corrosion when painted surface is damaged in service.

Oakite CrysCoating can be adapted for use in tanks or automatic washing equipment. Consult Oakite in your locality TODAY! Or write on letterhead for special service report containing complete details. No obligation.

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OAKITE *Specialized* **CLEANING**
MATERIALS · METHODS · SERVICE · FOR EVERY CLEANING REQUIREMENT

Essentials to Good SPRAY FINISHING

By FREDERICK M. CREWDSON

Author of "Spray Painting, Industrial & Commercial"*

Points to consider in the selection, use and cleaning of spray guns; some reasons for bad performance; necessity of clean air from the compressor; correct pressure of air; room cleanliness and good lighting.

MUCH ATTENTION is being given to the development of spraying techniques that make for better appearance of finished surfaces, give increased production, and reduce cost through a saving in material. Performance of the spray gun and the man "behind the gun" are of utmost importance in the effective application of surface coatings, and both need to be operating at their greatest efficiency to attain these objectives.

With a skillful operator and the correct type of spray gun in proper working condition, almost any material can be successfully applied to practically any surface. True, the compressed air system, air and fluid hose, and the type of spray booth all have their place and must be given due consideration, yet, in the final analysis, the gun and the operator "do the job."

*Copies of the book ($1.50) available at Industrial Finishing.

For Lasting Paint Adhesion Use •

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No 20

PAINT PREPARER FOR ALUMINUM SURFACES

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Used before painting operations on aluminum alloys, Alumiprep removes oil and grease, etches the metal and creates a lasting bond for all types of paint. It is easy to use: simply brush on and wipe off. It has been tested and approved by leading aluminum alloy manufacturers. With aluminum coming into ever-increasing use, Alumiprep plays an important part in meeting the growing demand. Write for literature.

For Information on Preparing Other Metals for Paint, Ask for Bulletin 46-60.

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Selection and Care of Spray Guns

Factors to be considered in the selection of a suitable spray gun include the volume of compressed air available or required, the material feed system, the object or surface to be sprayed, and the type and volume of material which the gun must apply.

Spray guns range all the way from the small touch-up gun to the pressure type gun used with material-feed equipment capable of spraying from one to several hours. Most manufacturers of spray guns have prepared literature describing the best type of gun for each specific purpose and explaining in detail all necessary adjustments for their efficient use.

The careful and efficient operator keeps his spray gun clean at all times. If the gun is in constant use it should be taken apart every week or ten days and thoroughly cleaned of any caked material which may have collected in the gun head. It should be inspected for worn or bent parts. By doing this, the operator becomes familiar with the mechanism and function of the various parts of his gun. Any worn or bent parts should be replaced at this time.

Immersing a gun in thinner to clean it is not good practice, as this takes the life out of the needle packing and causes leaks of air and fluid. A safe practice is to place thinner in the material container and spray this into the booth, forcing the thinner back into the container at intervals by placing the finger on the nozzle and pulling back the trigger.

When the holes in the air nozzle of the spray gun become clogged, never use a piece of wire to open

The small round holes in the head of this well used spray gun (and every other spray gun) must be kept clean and in perfect condition. Never use metal wire or a metal tool to clean them. Brush them with solvent or use a pointed sliver of soft wood to remove any caked material.

them. The majority of nozzles are made of brass (although perhaps plated with some other metal) and any small scratch or nick on the edges, which may be caused through using wire for poking at the holes, will cause an imperfect spray pattern. Usually a soft brush and the proper solvent will remove the obstruction, but if it has hardened to such an extent that these will not do the trick, use a wooden toothpick to clean the holes.

Carelessness or neglect of these elementary rules of cleanliness may cause trouble to develop, resulting in defective spray patterns, streaks in the finish, and wasted material.

Features That Make Spray Gun Comfortable and Efficient

When selecting a new spray gun, be very particular and discriminating. See if it is properly balanced and "feels right" to the operator. Remember that he will probably

Cleaning up A COOL $1,000

SUN SPIRITS . . .

Cleans Parts Without Excessive Evaporation, Cooling and Rusting

Cleaning machine parts before assembling them was a double headache for a New Hampshire manufacturer. First, he was using an expensive, unstable material for cleaning. Secondly, rapid evaporation caused chilling, followed by sweat and rust.

Sun Spirits, "Job-Proved" on metal cleaning work in hundreds of plants, was adopted. This solved the problem, and made possible savings estimated at $1,000 a year.

Parts are now cleaned quickly, simply and inexpensively. They pass inspection with no rusting.

This concrete example is typical of the way in which Sun Spirits has proved its value *on the job.* To get rid of dangerous cleaning materials or unnecessary expensive equipment that requires highly trained operators, let a Sun Engineer tell you how "Job-Proved" Sun Spirits can cut the cost of most cleaning operations.

SUN OIL COMPANY • *Philadelphia 3, Pa.*

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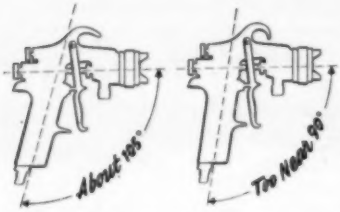
be using it as much as eight hours a day—and it is surprising how heavy a gun, especially one not balanced just right, can become. See that the gun handle rests comfortably in the operator's hand, and that the "rest" for the third finger is in a convenient position.

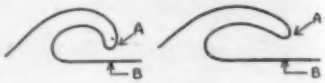
Assuming that the balance is right, take notice of the angle of the gun handle with reference to the gun "barrel". This is an important factor. Some guns are built so that an imaginary center line running through the head of the gun is at or close to a 90° angle with an imaginary line running through the center of the handle.



Notice the angle made by center lines through the handle and "barrel" of gun. When the angle is more nearly about 105° (as at left above) the gun is more comfortable and easy for the operator to use on general work.

Such a gun is all right for spraying small articles on a turntable below the operator's waistline, but for work requiring a greater movement of the wrist and arm, especially in an up-and-down direction, it would be very tiring.

Fatigue lowers both efficiency and production. A spray gun that has an angle of about 105° (see illustration) is more satisfactory, as it eliminates the unnatural bend of the wrist when pointing the gun at the work. In fact, a gun at or close to a 105° angle could be used satisfactorily for almost any type of work.

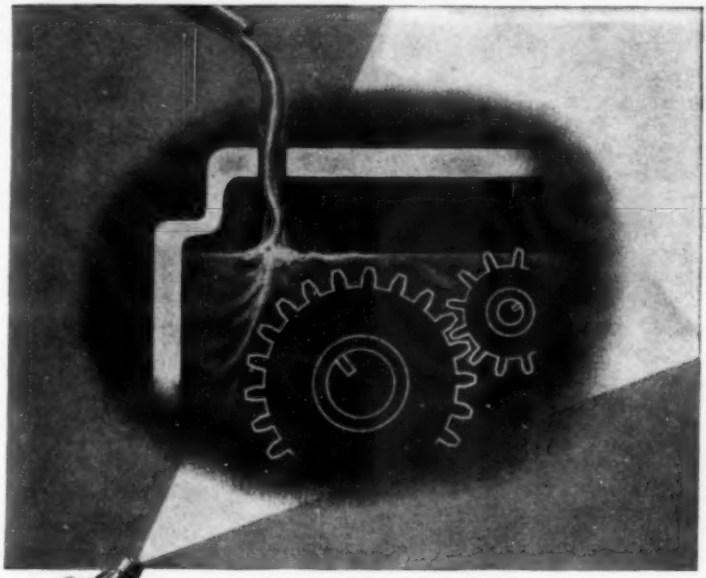


A gun with a small-radius hook, as at the left, and with only short space between points A and B, isn't so easy to hang up or take down from the hanger quickly. A fast operator prefers a hook more like the one shown at the right, so he can become accustomed to hanging up the gun and removing it quickly and surely without looking at the hanger.

An apparently insignificant detail to consider is whether the operator can hang up the gun after spraying without first looking at the hanger. The hook on the gun should be so designed that the operator can hang it up securely while still keeping his eyes on his work. True, this is a small item, but it can become an important factor to an operator who is working on a premium system. If he is forced to turn his eyes in the direction of the hanger every time he hangs up the gun, or if he has to wiggle it off when ready to use it again, here is a source of annoyance which hinders his speed of production. Besides, the act of repeatedly moving his eyes from the work being sprayed and looking for the hook and hanger is tiring on the eyes because of the necessity of refocusing them every time. Tired eyes make a tired operator, and such a person is not at his highest efficiency.

Bad Spray Performance and Some of the Causes

Like any other tool, the spray gun can cause the operator some trouble, but familiarity with the gun and its parts will enable him to recognize the source of the trou-



Special Lowe Brothers Sealer Protects Power Unit Mechanisms

Corrosion, core sand and foreign elements are enemies of hydraulic units, transmissions and gear housings, which run in oil or use oil to transmit power in many types of precision mechanisms. Ingenious design and accurate workmanship are virtually useless unless the interior of cast housings is adequately finished to eliminate these problems.

A special paint coating, developed by Lowe Brothers, has proved the answer to these problems. It is a sealer which may be either brushed or sprayed with consistently satisfactory results.

The application of this sealer to the interior of cast housings seals in any core sand and foreign elements not removed in casting preparation.

It stands up perfectly under constantly circulating hot oil.

The sealing and protecting qualities of this finish thus safeguards the unit against disastrous effect of foreign matter detrimental to working parts.

Lowe Brothers experience in serving makers of precision equipment, is at your disposal. Your request for advice involves no obligation.

INDUSTRIAL SALES
THE LOWE BROTHERS CO.
DAYTON, OHIO

Lowe Brothers
FINISHES for Industry

ble. Fluid or air leakage can usually be traced to worn-out or loose packing nuts, a worn out needle point, the presence of foreign matter at a vital point, or bent parts.

A dry or misty spray is usually the result of using the wrong air cap and fluid tip combination; or too high air pressure, or too low fluid pressure. "Orange peel" may be traced to low air pressure, or holding the gun too far or too near the surface being sprayed.

The cross section of a perfect spray stream shows a uniform density all through its entire width except for a short distance at each edge where it fades out. Any obstruction that restricts the proper passage of material as it leaves the gun head will distort the spray pattern. Distorted spray patterns, causing unevenly coated surfaces, occur when the horn or nozzle holes are wholly or partially clogged, and when the fluid tip or other parts of the gun head are dirty. Improper setting of the spreader adjustment will also cause imperfect spray patterns.

Compressed Air for Spraying Must be Clean

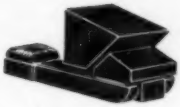
With the correct type of spray gun and a suitable finishing material properly thinned and strained into a clean cup or pressure tank, there is still the necessity for an adequate source of compressed air. Manufacturers of compressed air equipment will be more than glad to cooperate with anyone in the selection of a correct installation for the particular work to be undertaken. Regardless of the type of air compressor used, it will pick up moisture from the surrounding atmosphere and pass it into the compressed air line; there it condenses into water. Some of this moisture may pass through the spray gun and be deposited on the work being sprayed, thereby ruining the finish.

When the air compressor becomes old and worn it may also pump a small amount of oil into the compressed air line. This too will find its way on to the surface being sprayed. If the air intake filter on the compressor is not frequently cleaned, dirt and solid particles of foreign matter in varying amounts will get into the air line.

Installation of oil-and-water extractors at intervals in the compressed air line, with one at each spray booth and as near the spray gun as possible, will remove all foreign matter. Care should be taken to open the drain of the extractor every day to release the accumulated liquid and dirt. Every few weeks it is advisable to take the bottom off the extractor, remove the core, and wash the filter pads with naphtha or gasoline. When the filter pads become soiled they should be renewed.

Regarding the setting of air and fluid spraying pressures, these will vary with the work to be finished, the material to be sprayed, and the type of equipment being used. There is such a great difference in the factors involved that it is next to impossible to prescribe accurate pressures to use. The idea is not to get too perfect atomization through extremely high air pressure (this causes dry, misty spraying) but just enough atomization so that the paint is evenly distributed over the surface, without excessive overspray and with a minimum of fog.

Too high air pressure will evaporate much of the lighter solvents in the paint, leaving only the "longer" solvents. Because of this



O'Brien Gives
The Finishing Touch
to All Kinds of Products

Kitchen cabinets and machine tools, trucks and boats, rubber footwear and house trailers, toys and furnaces—these are but a few of the many products for which O'Brien is now manufacturing industrial finishes.

Whatever your product, a top quality O'Brien finish will make it look better. You'll cut finishing costs, too, because O'Brien finishes permit speedier application. Write us about your needs, ask us to quote on your requirements.

O'Brien Varnish Company, South Bend 21, Ind.

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SINCE 1875

evaporation of certain solvents, what was originally a properly balanced material reaches the surface in an unbalanced state—minus essential solvents for proper flowing out and leveling. Actual experience has demonstrated that often as much as twice the needed material is used when it is dusted away by fogging and overspray due to excessive atomization from too high air pressure. Correct adjustment of paint flow and air pressure will distribute the paint so that it reaches the surface with the proper solvent balance.

Correct Spraying Technique For Perfect Work

Now comes the actual operation of spraying—applying the material to the surface to be coated by means of the spray gun. The objective is to cover the surface with an even, wet coat of paint that will flow out to a smooth surface without runs or sags. Always spray at right angles to the surface and at the same distance from it. Usually the proper distance will be from 8-in. to 12-in. Holding the gun too close to the work tends to cause "flooding", and as a result of spraying on this excess material, runs, sags, and thick edges develop.

Be sure to pull the trigger back fully before hitting the surface being coated so that the work will be started with a full spray. Set a steady even pace or speed of movement across the work, and always keep it. Move the entire body and arm with the spray gun in order to keep the gun pointed straight on the surface and at a uniform distance from it. Failure to do this, or any appreciable variation of the distance at which the gun is held from the work, will result in an uneven coating. Another reason for this is to check the tendency of the operator to "pivot" or "fan" the gun from his wrist or forearm. Pivoting the gun brings it nearest to the surface when it is directly in front of the body, but when the gun is swung to the right or left extremes it is pulled away from the surface. This too causes an uneven coating.

Of course there are exceptions to every rule. For example, when such articles as chairs, reed or willow furniture, and similar irregularly shaped articles are being sprayed, the gun should be held at the most convenient position for the spray to contact the surface. Again, when spraying small articles on a turntable at or below waist level, it may be necessary, especially when a cup type of gun is being used, to spray at an angle. In such cases, best results are obtained by starting to spray the surface at the nearest edge and working away from it.

For a uniformly coated surface, each spray stroke should always overlap the preceding one about one-third, and should pass all the way across the work and be carried a short distance beyond the edge before returning on the next stroke; or else the trigger should be released for just a moment at the end of each stroke before beginning the next stroke.

Cleanliness in Spray Room Required for Clean Work

Cleanliness in the spray room gives its reward in finished work that is free from dirt, dust and lint. The operator's clothing should be clean and free from dust. Overalls and aprons should be changed as soon as they become soiled. Floors in the vicinity of the spray booth need to be kept

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Tomorrow's Lighting Equipment

A-M WHITE ENAMELS

Provide High Reflection Factor

Modern streamlined fluorescent lighting units use baked A-M enamels for top reflectivity. Permanent and mar-proof these whites are free from spotting and discoloration that assure top lighting efficiency.

Easily sprayed, the adjustable baking feature (up to three minutes minimum) provide a hard finish easy to maintain. One coat does the job. Gray finish coats are made to the same exacting requirements.

A-M FINE FINISHES

"Better Lighting" FINISHES

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clean. If dirt is allowed to accumulate, some of it is sure to be raised as the workers move about, and eventually it will come to rest on the newly sprayed products. Before beginning to spray, all paint should be strained. If, after taking these precautions, spoiled work due to dirt is produced, careful inspection will disclose the origin of the foreign matter.

Check on the dusting and wiping operations. Wiping with cloths in close proximity to the spray booth may cause more grief than can be imagined. Loose dirt and lint set in motion by this operation are sucked into the booth along with the moving air, and pass across the work that is in process of being sprayed. In this way some dirt is bound to be deposited on the newly sprayed wet surfaces.

Some wiping rags give off lint and fine particles of dust which may be left on the work even though it has supposedly been thoroughly wiped off. To insure a completely clean spray job, blow the surfaces with compressed air just before spraying.

Good Lighting Helps Prevent Eye Strain and Fatigue

The spray room and especially the spray booth, need to be adequately and properly lighted. Manufacturers of spray booths focus special attention on illumination when designing and installing their equipment. Through experiments and research work they have developed standard installations which meet the majority of needs. However, where size and shape of product being finished, as well as other operating conditions, make the standard installation unsuitable, efficient lighting can be custom built to meet these requirements. Manufacturers of spray booths are more than willing to cooperate in providing efficient and effective illumination for their spray booths.

Proper lighting is essential to good work. It eliminates eye strain. Strained eyes soon become tired and, strange as it seems, this tiredness is usually not felt in the eye at first, but may communicate itself to other parts of the body, causing a general tired feeling, headache, nervous and muscular tension, lowered visual acuity and other disturbances. Eye strain and its accompanying disturbances slow down the worker and cause production to suffer—both in quantity and quality.

Painting Rubber Balls

The inquiry entitled, "Painting Rubber Balls", as published on page 96 of I.F. for November immediately propounds another one to me: Why didn't the manufacturer of the rubber balls color his mix before making the balls? Balls made from colored compound do not chip, scale, or lose their original attractive appearance; and they can be scrubbed when necessary by careful mothers who — like the writer — have observed the propensity youngsters have for popping such playthings as small rubber balls into their mouths.

Since the balls are hollow, any finish applied should be at room temperature; otherwise expansion of the air within the ball would cause distortion, which would tend to weaken adherence of the finish when temperatures were again lowered.

If the equipment mentioned in

can your finish stand this test?

This is a scratching machine. Actually measures the scratching pressure that a finish will take.

By careful analysis and thorough painstaking tests, we build the type of finish you need for your own particular process.

Nothing is left to guess work.

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the Editor's reply is not available, the job can be done in washing machines of the "whirler" type, by spinning the balls in the basket, loading the unit only enough so that the balls are free to turn. The basket is used to remove excess material by centrifugal force. It probably would speed up the job if two baskets were available for each machine, as then one basket could be emptied while another was in the solution, or spinning off the excess finishing material.—ELTON STERRETT.

Testing Finish Materials

I've just finished reading the lead editorial in November I.F. — the one entitled "To Test or Not to Test Materials" (Page 118). I agree with the writer that all but the largest plants do not have enough testing to justify equipping and manning a laboratory. Apart from the alternative suggested by the writer, however, there is another avenue open to the plant owner. He can take his problem to any of several testing laboratories in his vicinity and, through their specialized services he will get a ready answer which — in many cases — requires nothing more than a comparison with research work already performed elsewhere.

Apart from the commercial testing laboratory, the plant owner also can take his problem to one of the Research Foundations which, as adjuncts to technical schools, are sometimes able to fit such work into their research programs — again giving the individual plant owner the benefit of a wide field of experimentation and investigation.

Where the plant owner has a special process, or if he has developed materials which he is a bit hesitant about "exposing" to firms in the same line of work, he may be assured of protection at the commercial laboratory, and of anonymity, if he desires, at the university research units. — ELTON STERRETT.

C. J. Hurley, Superintendent of Finishing Retires

Cornelius J. Hurley, superintendent of the finishing department of the Heywood-Wakefield Co., Gardner, Mass., one of the oldest furniture manufacturing firms in the country, retired October 18 after 62 years of continuous employment with the firm. He had been head of the finishing department for 54 years.

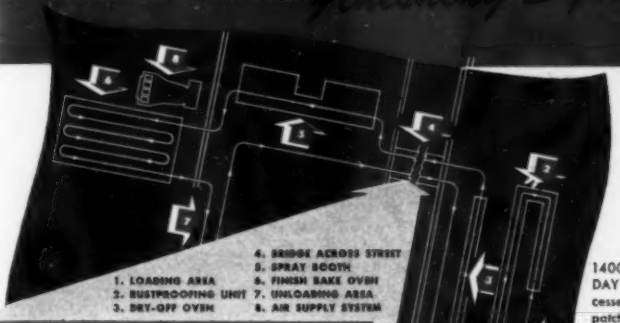
A native of Worcester, Mass., he began work for the Heywood-Wakefield Co. in 1884 in the Boston plant of the firm, and four years later was transferred to Gardner. He became superintendent of the finishing department in 1892. His period of service saw the transition of the finishing end of the furniture industry from almost all hand work to the present, with hand work reduced to a minimum. Finishing speed has quadrupled since the old days, with the use of the spray gun, fast drying finishes, and conveyor systems to do away with hand trucking in the finishing process.

C. H. Hurley, head of finishing for Heyw'd-Wakefield since 1892, has retired. Age 79.

Now 79, Mr. Hurley has been in poor health during the past two years, and much of the actual operation of the Heywood-Wakefield finishing department has fallen on Emile A. Richards, former assistant superintendent, now head of the department.

another complete

DESPATCH *Finishing Systems*



1400 UNITS PER DAY can be processed on this Despatch Finishing System.

it jumps a 60-ft. street to solve a finishing problem

Six-stage Spra-Bonderite unit as seen from loading area. Entrance at right, exit at left.

Confronted by an unusual problem involving space, handling, and finishing capacity adequate to turn out 1400 kitchen cabinets and other household appliances per day, DESPATCH engineers planned and installed the Finishing System you see above.

To do the job it was necessary to work on third floor level, to use two buildings, the roof of a third and to cross a 60-ft. street besides. Material remains on an endless conveyor 1000 ft. long.

Engineered, planned and installed under *one* responsibility, this typical installation explains why DESPATCH's broad experience in this field guarantees superior results . . . assures *you* of a unified, efficient Finishing System designed to provide maximum production at minimum cost.

Exit end of dry-off oven. Material leaves oven on conveyor and is carried over bridge into building across the street.

Finished parts leaving finish bake oven. Conveyor makes 6 horizontal passes through oven, traveling 225 feet.

WRITE TODAY! Get helpful NEW BROCHURE describing the Despatch Finishing System shown above.

DESPATCH Oven Company
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Complete Finishing Systems or Individual Ovens
BAKING OVENS • RUST PROOFERS • DRY-OFF OVENS
AIR CONDITIONERS • SPRAY BOOTHS • CONVEYORS

DESPATCH
OVEN COMPANY

Having been asked for information or advice on the use of wrinkle enamels, it occurred to me that an article on the subject might be appreciated in the trade. This one is the result. Possibly you can use it in Industrial Finishing.—

G. A. Conrad

PREPARATION, SPRAYING AND BAKING OF *Wrinkle Finishes*

by G. A. CONRAD
Supervisor of Finishing
American Coils Company

DURING THE PAST 20 years, a continual flow of trick finishes has been offered to manufacturers and their industrial finishers. By trick finishes I mean those that present to the eye some further impression other than color and gloss. In most of these finishes, this feature has been accomplished by incorporating into the finishes some peculiarity of surface texture, light refraction, odd color formation, or combinations of these qualities.

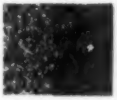
Most of these products of the paint manufacturer's artistry have had a more or less degree of acceptance. Wrinkle finish especially, has steadily increased in popularity and utility. Today, under various names, it is part of the repertoire of almost every paint manufacturer; and it would be hard to find a home, office or factory in which there is not some article coated with wrinkle finish. This almost universal acceptance has been well deserved. It is a far cry from the unpredictable wrinkles of a few years ago to the high-speed, almost fool-proof numbers obtainable today.

Early Wrinkle Finishes, Versus Modern Dependable Materials

Many finishers will recall the early oil-type material which had to be carefully sprayed on, layer by layer to obtain a coat of the thickness required. If it did not run while you were spraying it on, it almost certainly would run when the oven heat hit it. Some wrinkles required an initial bake in a foul oven or in the presence of a car-

One Coat
WRINKLE INDUSTRIAL FINISHES

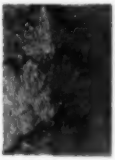
What it is...



UNIFORM WRINKLE

Wrinkle is an industrial finish, the textured surface of which is produced by chemical action. Wrinkle coatings are produced under many broad patents by approximately 200 leading manufacturers of industrial finish materials.

Application Information...



PINE TREE WRINKLE

Wrinkle coatings are applied by dipping, spraying, knife-coating or roller-coating. Drying is in oven or by infrared. Some Wrinkle coatings can be air-dried. No special equipment is required. Wrinkle industrial finishes are ideal for modern mass-production shops, because they cover surface manufacturing defects with just one coat. Wrinkle is inexpensive.

Why you should use WRINKLE... ...its advantages

SAG WRINKLE

Wrinkle is the most versatile of modern industrial coatings. It comes in all colors and black; the Wrinkle texture or pattern may be controlled to your specific requirements. Wrinkle is hard, durable, long-lasting, practically scratch- and marproof. Because it is a one-coat finish, requiring no surface preparation, it is the most economical of coatings, saving both material costs and many hours of time; it does not reflect light; it is very beautiful, adding "buy-appeal" to your products. Investigate Wrinkle today!

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bon flame. This pre-heating formed the pattern and was followed by a long bake at a higher temperature to cure the finish. If you were lucky the resulting finish would be covered with coarse, glossy puckers of no particular pattern or uniformity. If you were not lucky, you would find shiny spots or "hanging curtains" which necessitated refinishing. Colors were limited to black and a few dark shades.

The wrinkle finish of today is a modern product tailor-made to fit almost every conceivable problem of production or design. Two virtues which brought the early material into favor are still present. These are its ability to hide weld spots, pits and other surface imperfections, and the fact that it is a one-coat finish, requiring no primer or surfacer. However, under certain extreme conditions, the use of a primer may be justified to obtain maximum adhesion.

The unlimited choice of color, texture and gloss obtainable in the modern wrinkle is a challenge to the artistic ability of the finisher and product designer. Beautiful effects may be obtained by spraying metallic pigment over a wrinkle base. Judicious use of contrasting colors on separate parts adds sales appeal to an otherwise drab product, without adding to the cost of finishing.

The combination of black wrinkle with polished or satin chrome plate is familiar to everyone. Some of our most carefully designed articles utilize the strikingly beautiful effects obtained by spraying a coat of smooth enamel, masking certain portions, and then spraying a coat of wrinkle in either the same or a contrasting color. In short, the possibilities for harmonious and truly individual finishes are limited only by the skill and imagination of the processor.

Selection, Preparation and Spraying of Wrinkle Finish

Generally speaking, your wrinkle finish should fit your individual requirements. Although it is a patented material manufactured under a license system, some manufacturers have had more success with certain types or colors than with others. Therefore it may be necessary to shop around a bit to have more than one source of supply.

Most wrinkles are rather unstable once the can is opened, hence it is more economical to buy them in containers that can be used at one spraying. Due to the high viscosity of the material, a pressure tank is necessary, as thinning is not advisable. If thoroughly stirred before being placed in the tank, no further agitation is necessary for several hours. Fast agitation in the tank may cause jelling of the material. Using the original containers, inserted into a pressure tank without agitator, a constant supply of freshly mixed material can be furnished as needed. Waste and left-overs are minimized, and colors can be changed rapidly without excessive cleaning. Almost any spray gun will work, but a fine fluid tip and multiple jet air-cap give best results.

As a general rule, wrinkle finish should be sprayed heavier than other materials. For large objects, the most uniform pattern will be secured by working over the surfaces in two or more medium coats, crossing the strokes. For smaller objects or where vertical surfaces are encountered, wrinkles may be

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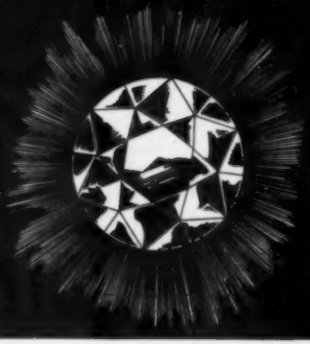

RED X

Fusion Type FINISHES

Reliance's new Red X finishes add greater clarity of color, improve toughness, body and adhesion, and promote greater durability because all coats fuse together instead of lying on top of each other. There's no bleeding or fading, no swelling, shrinkage or turning gray in the pores. You, too, can improve quality by using Red X finishes and in addition, save both time and money.

Get the full story of Red X Fusion Type Finishes. Write to Reliance Varnish Company, Inc., 915 E. Kentucky Street, Louisville 4, Ky.

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RELIANCE VARNISH CO.
INCORPORATED
LOUISVILLE, KY. • CHICAGO, ILL.

formulated that are virtually non-sagging. For intricate shapes that are impossible to spray evenly, there are wrinkles which will pattern fairly uniform, whether coated heavy or light.

When sprayed, the article may be baked at once, or if this is not feasible, most wrinkles will stand several hours wait before baking, without appreciable harm. The baking cycle can be made to fit your schedule.

Wrinkle Finishes Can be Used on Wood, Paper, etc.

Although mostly used on metal, a wrinkle finish may be successfully applied to wood, paper, or almost any material. For the best results on wood, the wood should be kiln dried and the wrinkle finish should be formulated to bake at the lowest possible temperature, and to pattern with the lightest possible coat. If time permits, a sealer coat will often help. If no sealer is used and if the wood looks suspicious, pre-heating to above the baking temperature will expel air from the wood cells and also any sap which, if left in the wood, might ruin the job. The piece can then be sprayed while its surface is still hot.

On glass or porcelain the general practice is to mask those surfaces that are not to be coated; then sand, sandblast, or etch the areas to be sprayed to improve adhesion. Bring the heat up gradually to avoid cracking.

In conclusion, here are a few generalities regarding the properties of wrinkle which may be useful to the finisher. Usually, 1) the heavier the coat the coarser the pattern; 2) the higher the initial heat, the finer the pattern; and 3) the higher the bake, the duller the finish.

A long air-dry, followed by a long low bake, enhances the gloss.

A fine pattern is usually appropriate for small objects, while a coarse pattern is generally desirable for larger ones.

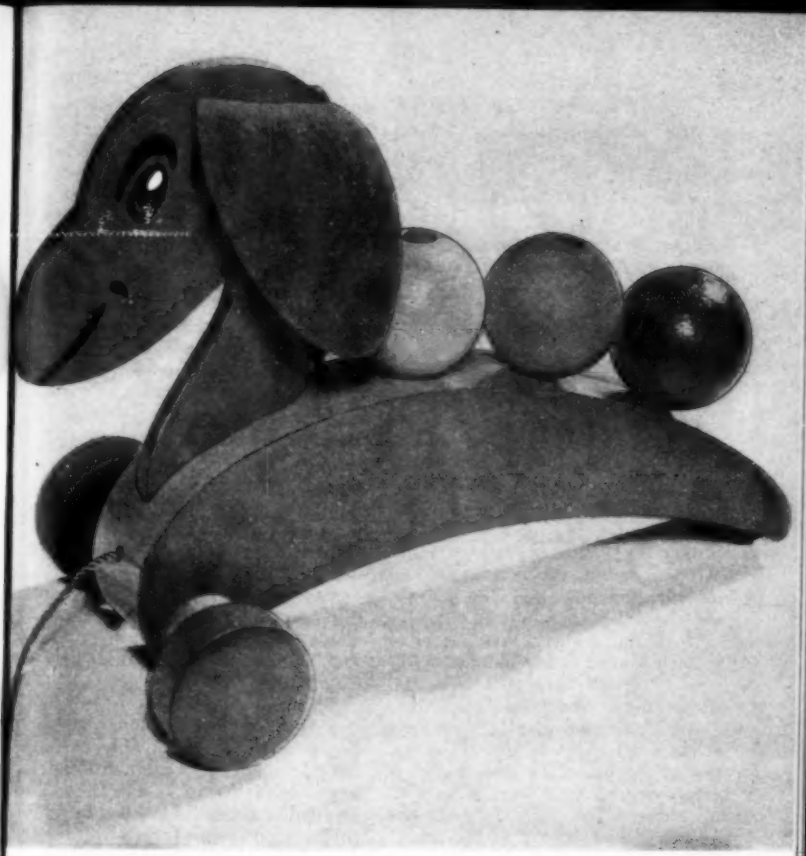
Foul ovens sometimes produce a silvery haze on black and dark colors. Dipping or spraying with hot or cold water will often remove this objectionable haze and save refinishing.

A wrinkle finish that has become soiled can often be cleaned by brushing kerosene into the surface and then blowing it out with compressed air.

Metallizing Book, $2.00

A complete collection of technical and operating data on the Metallizing Process is contained in the fourth edition of the Metco Metallizing Handbook, published by Metallizing Engineering Co., Inc., Long Island City 1, N. Y.

Profusely illustrated with pictures, drawings, diagrams, charts and graphs, this 86-page, pocket size handbook presents both practical and technical aspects of the Metallizing Process in complete detail. Price $2.00.



TODAY, MORE THAN ever before, people have come to appreciate the creative hand of the designer in the products they buy. This is especially true of such products as automobiles, radios, refrigerators, ranges and countless other items that were so widely publicized through the war years. Extensive advertising, put forth by manufacturers of these products, showing the conceptions of America's leading industrial designers has given the general public a better understanding of function and design. It is doubtful though, despite this greater understanding, whether any great pro-

portion of the public realizes that the approach to a product's design is much the same, whether that product is a refrigerator or a child's toy.

Design of New Product Calls For Collection of Basic Data

In designing a new product the preliminary step is the collection of basic data. Research into existing items of a similar nature must be carried on with an open mind. Using this as a basis, other factors are then considered such as, "Where and how will the item be used and who will use it?" These factors have a direct bearing on the product; they determine its price range, the choice of materials, its construction, and finally the type of finish to be used. These specifications are then viewed from a technical standpoint.

Not all designs are feasible from the point of mechanical applications or cost factors. The designer must understand machines and their limitations. He must have a thorough knowledge of operation costs. When the final design is completed he must back it up with workable plans. Often this is not so easy but it is part of the job.

An industrial designer is not just an artist drawing a pretty picture. He is an engineer, using his imagination and ingenuity to make the pretty picture a reality. To say that this procedure results in better products for everyone is certainly a statement of truth. In the toy field, conclusive evidence of this fact can be seen from the psychological and scientific types of toys that are now being offered. Considering the important part that toys play in the lives of children, the time and effort necessary for their creation is certainly well spent.

Toys are now designed with a purpose, and that purpose is not simply one of providing amusement. There is also the object of promoting the more essential objectives of child development and education. In a child's earliest years he should be brought into contact with toys that will invite initiative and self expression of ideas—and through this association of size, shape and color he will develop mental alertness.

Waddling Dog, Pull Toy Has Features of Interest

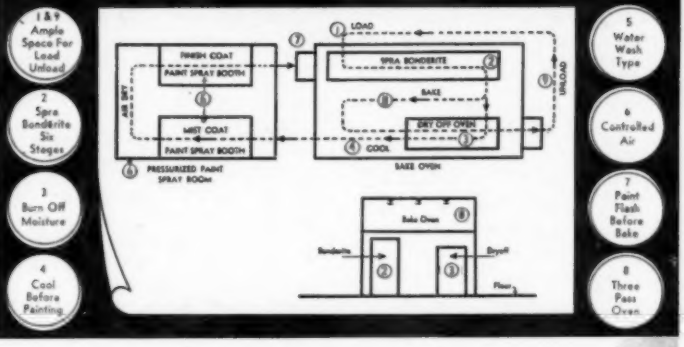
The waddling dog pull toy illustrated in this article is an example of a toy of this type. Created especially for the toddler, it is designed to promote crawling and walking. This action toy has off-center wheels that give it a waddling motion when pulled. This motion also causes its cloth ears to flap, all adding to the child's amusement.

To promote muscle coordination the three colored knobs on the dog's back are removable, fitting over permanently fastened wooden pegs. They are of a size that can be readily gripped by the child; but they are too large to be swallowed, therefore the youngster is protected by this safety feature. Fitting these knobs over the pegs gives the child something useful and interesting to do. At the same time he is developing a sense of true color appreciation, for the knobs are finished in red, yellow and blue. The pegs are similarly colored and it becomes an easy task to match the right knob to the peg of corresponding color.

Naturally, any toy for small children should have a safe finish—colors that are non-toxic, to remove any chance of lead poisoning which is always possible with or-

Complete coordination of all component parts

ROSS *Paint* Finishing System



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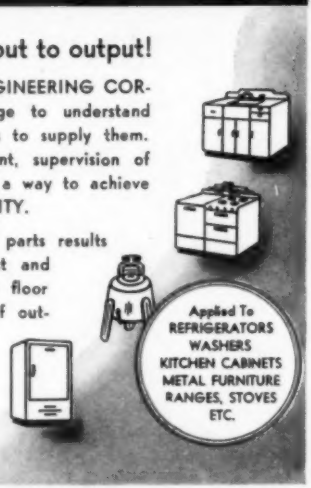

ROSS SYSTEMS

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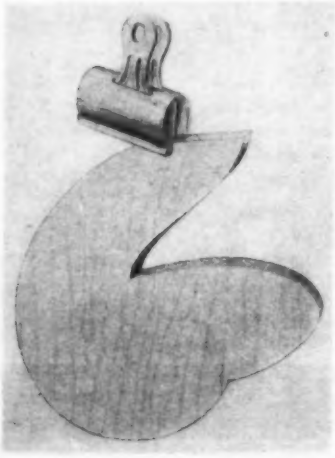
dinary paints and enamels. To this end the toy designer specifies the use of non-toxic colors manufactured by any one of a number of reputable firms. Actual safety in the use of these colors is guaranteed by manufacturers of the paint products and the entire toy industry relies on the integrity of the firms that make this guarantee. These non-toxic finishes are put on after all of the parts have run the gauntlet of necessary machine operations and have been given a coat of sealer or primer.

Dipped in Thin White Sealer; Smallest Parts are Tumbled

The priming coat can be applied in a number of ways, depending upon the size and shape of the parts in question. The head and body of the waddling dog pull toy are dipped in a very thin solution of white sealer. Using white as a primer makes the finished colors more brilliant and intense; it is used on all of our finished toys. Small parts, such as wheels, knobs, beads and pegs are tumbled in white primer. This has proved to be the most satisfactory and economical way to prime coat these small wooden parts. When dry the prime-coated parts are all sprayed with non-toxic colors.



Some parts without holes for a hook are held by a spring clamp, for dipping.

Special methods and devices have been developed for handling the different parts of each toy. For instance, while being spray painted, the body of the dog is held by a wire hook inserted in the rear wheel hole. Later, these wire hooks, each holding part of a toy, are hooked over a series of tightly stretched cables which form part of a specially built movable rack for drying.

The dog head, having no holes in which to insert a wire hook, is held by a small spring clip. By applying the clip to the lower part of the dog head, the small mark left by the clip is hidden when the toy is assembled. A wire hook attached to the clip enables this unit to be hung to stretched horizontal wires for drying. These small spring clamps have proved to be a good investment. They can be used repeatedly and can be adapted to many types of small parts.

Finish Color Sprayed While Parts are Held in Position

Beads and knobs, to have a glossy surface, must be sprayed. They are generally mounted on pegs set in large spray boards. In this fashion, 100 or more can be sprayed at one time. These knobs are left on the boards for the paint to dry; then they are ready for assembly. Small beads are sometimes strung on long wires and

In winter quarters, performers and equipment alike make ready for the long arduous season. Interchemical Finishes play an important part in this preparation.
Photo by Harold M. Lambert © Interchemical

...STARTS WITH **'AN INTERCHEMICAL FINISH'**

Gayly covered circus wagons, trucks and railcars are exposed to rain, brilliant sunlight, and the wear and tear of daily loadings and unloadings on the road. That's why each year before starting out on tour, roadwise maintenance men of the Ringling Bros. and Barnum & Bailey Circus decorate and protect their rolling stock with "An Interchemical Finish."

Circus people have learned, through 14 years experience, that "An Interchemical Finish" can take it and come up bright and shining in the next town. The finishes in use by the circus were formulated to meet special conditions. ***In the same manner Interchemical will formulate a finish specifically designed to meet the conditions under which your product is to be manufactured and used.*** Remember — To Give Your Product A Good Start — Give It "An Interchemical Finish."

If you're interested in product finishes, write for booklet, "A Film is Born." Interchemical Corporation*, Dept. IF-12, Finishes Division, 350 Fifth Avenue, New York 1, N. Y.

**A consolidation of Ault & Wiborg Division of Interchemical Corporation and Murphy Varnish Co.*

Interchemical Finishes

MAKERS OF POLYMERIN—THE ORIGINAL SPEED-BAKE FINISH

sprayed with two or three sweeps of the spray gun. By snapping the wire as they are being sprayed, the beads have a tendency to turn just enough so that the entire bead comes in contact with the spray and is completely covered.

Wheels are laid flat on sheets of heavy cardboard (about 2-ft. square) and are sprayed on one side at a time. Turning the board on the spray booth turntable as the spray sweeps over them also covers the edges. When dry, they are turned over and the other side is sprayed. In this way the edges, which receive the severest wear, get a double coat of color..

Screen Stenciling and Hand Painting are Used Effectively

The facial features of the dog are put on by the silk screen process. Naturally, silk screen process colors are used for this work. One screen, printing both a right and a left side, enables two heads to be screened at once. The specially adapted base beneath the screen has cut-outs in which the heads are placed. This provides a flat overall surface on which to lay the screen, and the heads are kept in rigid position while screening. The eyeball, which is a different color, is painted in by hand after the head is fastened to the body. To give a real highlight effect, a gloss enamel is used.

As a final finishing touch, after the entire assembly is completed, the toy is given a light rubbing with paste wax. This does much to prevent the toy from becoming soiled while being displayed on the retailers' shelves, and while being handled by potential customers.

From this account of our manufacturing procedure, it can be seen that the finishing industry contributes much to the successful manufacture of toys. In providing sealers, primers and special non-toxic paints that can be sprayed, dipped or tumbled; special colors for silk screening, and finally protective waxes to complete the job, the paint, varnish and lacquer industry is really responsible for this attractive toy—one of many—leaving the factory in the finest condition. On the P. V. & L. industry's shoulders rests the burden of seeing that these, and other toys too, reach the fortunate youngsters of today in the same bright colorful fashion that the designer produced them.

Rough Surface Rubber Gloves

"Griptite," a new rough-surface finish which permits a non-slip grip even in liquids, has been developed by the Surety Rubber Co., Carrollton, Ohio, for its Sureseal super-resistant synthetic rubber gloves. The Griptite finish is an integral part of the glove. It will not peel or wear off, nor will loose particles break away while working in liquids.

Surety Griptite finish Sureseal gloves are available in all standard weights and sizes, in turn-cuff and regular gauntlet styles, and with curved or straight fingers.

Lacquer Training School

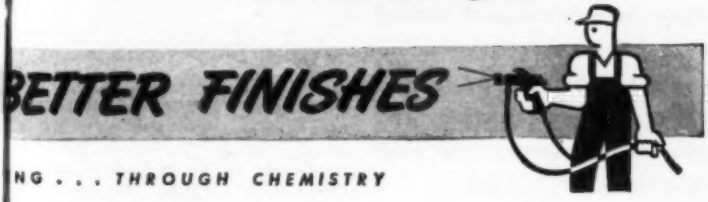
Graduation exercises held at the Hercules country club November 21 brought to a close the 1946 lacquer training school conducted by the Cellulose Products Department of Hercules Powder Co., Wilmington, Dela.

Students in the 3-month course studied formulations and applications of lacquers under the guidance of Hercules specialists. The course was the third one given this year. Fifty-seven students, including two from China, one from Bolivia, as well as the three foreign graduates this term, have completed three months of study at the Hercules Experiment Station.

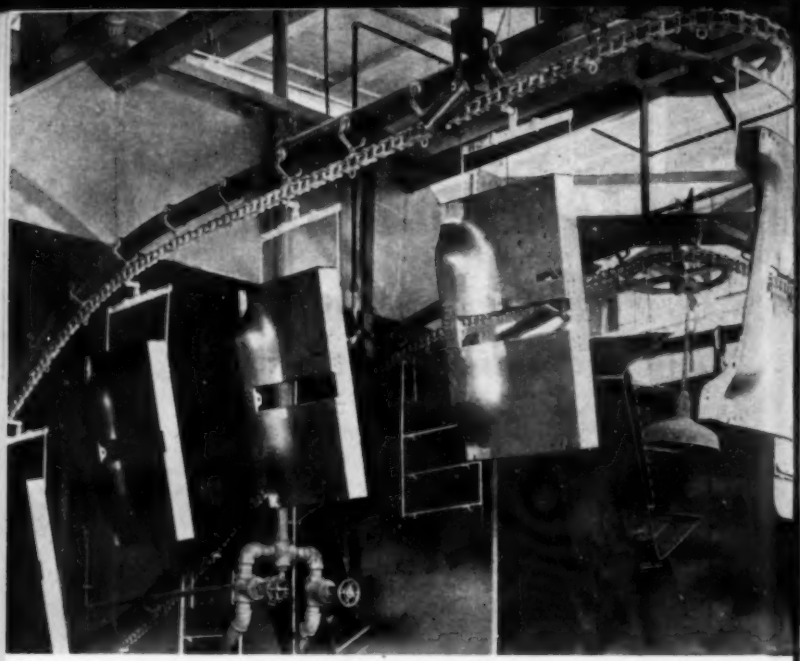
The school was established to give students an up-to-date picture of the lacquer industry. For many of the men, ex-servicemen, the school served as a refresher course to acquaint them with new ideas and techniques developed during their service in the armed forces. For others it was an introduction to lacquers.

MER THAT NEEDED PRIMING

w a Du Pont Finishes Engineer licked a tank of trouble



NG . . . THROUGH CHEMISTRY



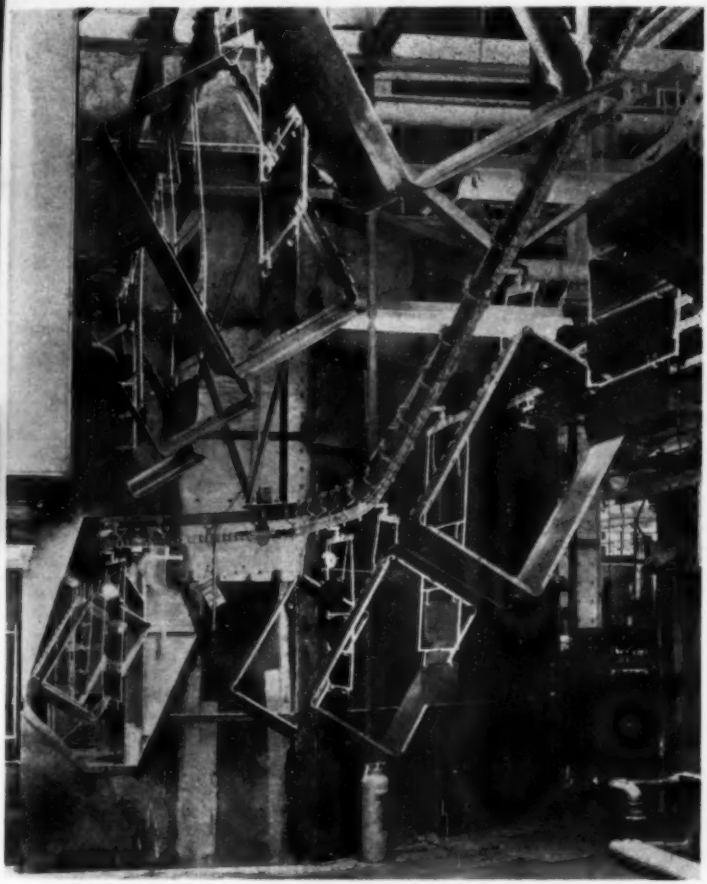
This view shows how Ironrite ironer parts enter and leave the 3-stage cleaning operation. In this operation the parts are washed with a cleaning solution, rinsed and "passivated." Each operation is performed in an individual tank. The loop-around conveyor carries parts through all three stages.

Mechanized, Painting and Infra-Red Drying Setup

This new conveyorized setup includes a 3-stage chemical cleaning, a mist coat followed by a full spray coat of white enamel, and finally a 6-minute drying in dual heat infra-red oven which was custom built especially for this job.

Photographs furnished by Jenson Specialties, Inc.

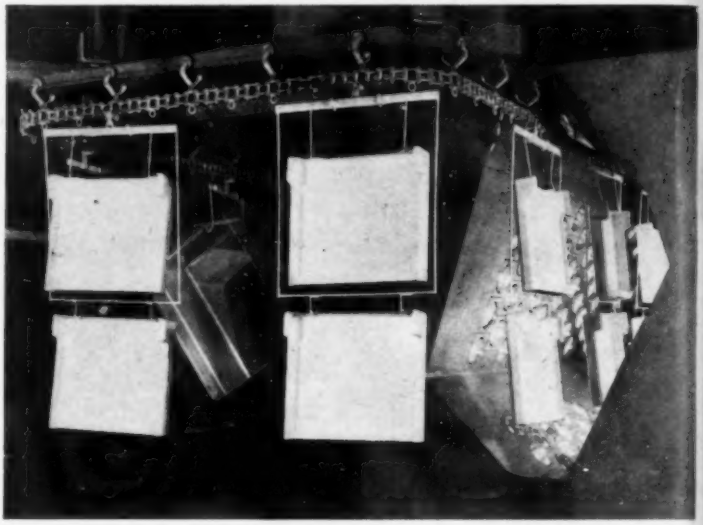
AT THE IRONRITE IRONER Co., Mt. Clemens, Mich., four different sizes and shapes of ironer covers and panels are finished with synthetic white enamel. Each of the four parts is drastically different from the other three. Yet, to gain top operating



View showing Ironrite ironer parts being conveyed by overhead chain conveyor into paint spray room, after coming from 3-stage cleaning operation.

efficiency, it is essential that all four pieces go through the finishing processes at the same time.

How to accomplish this was the problem presented by Ironrite to engineers of a Detroit manufacturer of "dual heat" infra-red ovens, special conveyors and paint dip tanks. The engineering firm designed and built an unusual oven, employing a special shape with an effective "nested" lamp arrange-



Ironrite ironer parts entering 48-ft. "dual-heat" infra-red oven for baking. Baking cycle: 6 minutes. Because of special design of oven, four different sizes and shapes of parts are processed at the same time. Note the "nesting" of lamps, which makes possible perfect evenness of color, even though the paint baked is white enamel.

ment that makes completely practical the baking of all four sizes and shapes of parts in one operation. This special oven makes possible a baking cycle of only six minutes on the synthetic white enamel.

Loop-Around Conveyor; 3-Stage Cleaning System

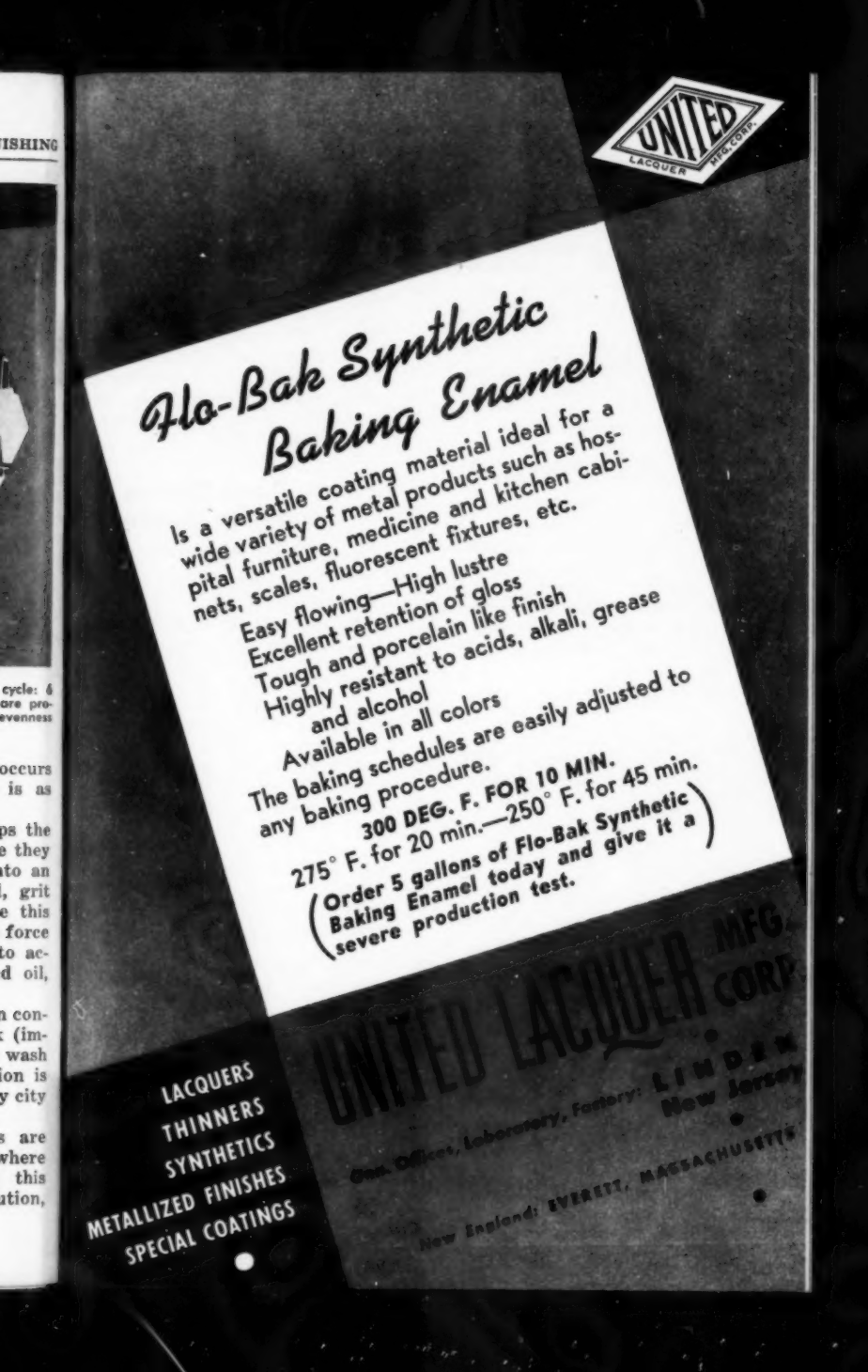
To co-ordinate with this oven, the engineering firm designed and installed a special loop-around conveyor that carries all of the various shaped parts at the same time, without interruption for attachment changes.

Prior to painting and baking, the parts must be cleaned absolutely "chemically clean." This was accomplished by designing and installing a unique 3-stage system which establishes a cleaning cycle of only 1¼ minutes. What occurs during each of the stages is as follows:

Stage 1. The conveyor dips the parts into a wash tank where they are completely submerged into an alkali solution to loosen oil, grit and dirt. As the parts leave this tank, they are sprayed with a force spray of the same solution to actually clean off the loosened oil, grit and dirt.

Stage 2. The parts are then conveyed directly to a rinse tank (immediately at the back of the wash tank) where the alkali solution is cleaned off, under pressure, by city water.

Stage 3. Finally the parts are conveyed to a third tank, where they are again submerged, this time into a "passivating" solution,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for the purpose of inhibiting the parts against rust and corrosion. This last precaution is taken in order to have "corrosion control" in the event of any breakdown or shutdown causing an appreciable time gap between cleaning and painting.

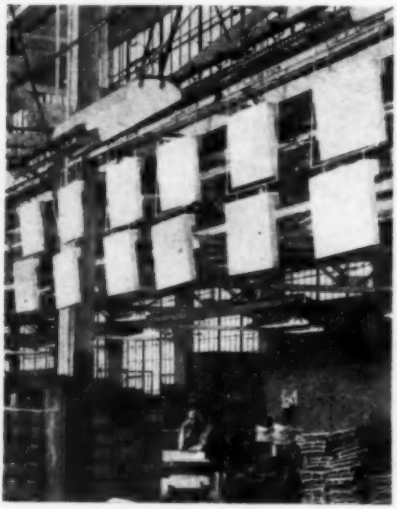
The fact that the cleaning cycle requires only 1¼ minutes is especially significant because the time of the cleaning cycle controls the speed of production.

Mist Coat Plus Finish Coat; Infra-Red Drying Tunnel

In the Ironrite finishing process, a "two-coat, one-bake" system is used. Due to the exceptional penetrating quality of "dual heat," it is possible to eliminate completely the usual primer bake oven. Instead, at Ironrite, the prime coat is "misted" and allowed to dry for three minutes before the finish coat is applied. Then the one oven, employing "dual heat," bakes both coats in one operation.

The "nested lamp" feature of the oven eliminates the possibility of discoloration, always a hazard when white enamel is baked. Nesting the lamps and positioning them in staggered alignment obviates any chance for over-baking some areas and under-baking others.

Finished Ironrite ironer parts moving by conveyor to the assembly department.



Those Paint Blisters on Aluminum Castings

By ELTON STERRETT

THE ARTICLE "Stop Paint Blisters on Aluminum Castings," on page 42 of Oct. 1946 issue, describes troubles similar to those we encountered in custom finishing several thousand aluminum castings for the Army Quartermaster. The blisters, like those Mr. Wattenberg encountered, caused rejections and seriously cut down production. They, too, were traced to the formation of air bubbles under the coating material —or, more exactly, to the expansion of air trapped in the castings prior to coating and which, at the high curing temperatures, required more space.

Sealing with Sodium Silicate Not Exactly Satisfactory

We tried the sealing method involving immersion in a sodium silicate solution, but soon arrived at the conclusion that it was impossible—or at least impracticable —to position each casting in the solution so that the fluid could enter and completely fill each tiny hole. And, where complete replacement of air or occluded (shut in

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or absorbed) gases by the solution was not obtained, the residual air would expand under the heating given the coating, and bubbles would follow. Experiments in raising the working temperature of the sealing solution succeeded only in reducing the size of the bubbles, but not in decreasing their frequency or the certainty of their occurrence.

Too High or Too Low Casting Heat Causes Excessive Porosity

Close check of casting temperatures of the aluminum in the nearby foundry proved two basic facts: 1) that the amount of porosity in the casting increased rapidly in case the pouring temperature was more than 50° above or below the optimum for the alloy being used and, 2) that such close regulation was impracticable from a production standpoint.

Study of polished specimens through micro-photographs showed that the surface metal was in effect being flowed across minute pores near the surface, forming traps for air and affording supports on which the finishing material would bridge, giving an air-trapping effect several times that of a "raw" casting.

Sandblasting; Shotblasting

We tried sandblasting, with varying pressures and grits. Finally we discarded sand entirely in favor of metallic shot. Use of shot, with a 40-lb. nozzle pressure on the air hose, was found to remove far less metal from the castings than did sand, while the peening (hammering) effect obtained tended to give a hammered surface with none of the "flowed" effect observed when any grinding or polishing was used to prepare the metal. This hammered surface did not have the superficial gloss of a ground or polished casting, but the percentage of rejects through blistered finish was less than 25% of that encountered before the experiments were made with the shot blasting. Since minimum light-reflecting qualities were sought in the finished goods, there were no objections from the inspectors unless the blast were maintained in one spot long enough to form appreciable pits in the relatively soft aluminum alloy.

More Experimenting Discloses Added Information

Following completion of the government job, a small quantity of surplus castings was brought into the plant for further experiments which, due to wartime needs, were necessarily curtailed in favor of immediate output. Working further with the immersion method of sealing the castings against the presence of subsurface air traps, a scheme was perfected for immersing the castings in the sodium silicate solution under pressures sufficiently high to permit the solution temperature to reach or slightly surpass that of the castings under infra-red lamp batteries during the baking process. Sudden lowering of the pressure in the bath caused the air trapped in the castings to expand and work free, to be replaced by the solution with quite satisfactory sealing.

Castings thus "evacuated" of the air and gases trapped in surface pores were found to show greatly reduced bubble trouble when subjected to the standard finishing temperatures.

It was found, from further investigation, that bubble formation could be induced in the castings

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which had satisfactorily passed inspection at normal finishing temperatures, if the curing rate were speeded up by increasing the infrared bank temperature by more than a few degrees above the temperature reached in the sealing bath process. It appeared that further temperature rise tended to set up minute pressure foci inside the casting beyond those eliminated in the earlier treatment, and that these then acted exactly as had the original air traps nearer the surface.

We also experimented with exhausting the air from casting pores in fairly high vacuum, admitting the sealing fluid to the castings while in the chamber. Results, qualitatively, were good; but the time factor ran the cost up prohibitively. We are still experimenting, sporadically. But in the meantime the plant has done some very nice custom jobs for instrument makers with a minimum of rejects from blistering. And on some special aluminum-copper alloys with high copper content, blistering has been noticeably absent.

Lectrodryer Bulletin Free

Pittsburgh Lectrodryer Corp., manufacturer of dehumidification equipment, now has available for distribution a new catalogue (Bulletin 105) which contains 36 profusely illustrated pages.

The new catalogue describes and illustrates many of the standard sizes and types of Lectrodryer equipment, including Lectrobreathers for preventing the entrance of moisture into storage tanks and Lectrofilters for removing oil vapor from compressed air or gases. Also listed are many of the everyday and special uses of Lectrodryer devices, together with information and data explaining how to solve drying problems.

Those wishing a copy of the catalogue may obtain one without cost by writing to Pittsburgh Lectrodryer Corp., Box 1766, Pittsburgh 30, Penna.

New Pickling Process for Aluminum

A new process, eliminating the acid hazards present in conventional bright dip formulas, has been perfected for pickling aluminum and aluminum alloys, according to a technical bulletin issued by the Testing Laboratories of the Waverly Petroleum Products Co., Drexel Bldg., Philadelphia 6, Penna.

The bulletin reports that by using Troxide-E in the place of standard acids, a solution can be made up that is entirely safe, yet it produces bright clean metal surfaces within the time required by conventional pickling solutions.

Detrex Appoints Processing Equipment Manager

Detrex Corporation announces the appointment of W. E. Gilbert to the Sales Department as manager of the Processing Equipment Division. Mr. Gilbert's new duties will deal directly with the numerous phases of automatic cleaning and finishing machines, rust proofing systems, dip tanks and aluminum processing equipment.

W. E. Gilbert is now manager of Processing Equipment Div'n. for Detrex Corp., Detroit, Mich.

Mr. Gilbert joined Detrex in February 1939, and soon became factory superintendent of the dry-cleaning division. In 1941, he was appointed plant superintendent in charge of all equipment fabrication, a position which he held until his recent transfer to the Sales Department.

Mr. Gilbert brings to his new position considerable experience in manufacturing and field erection work. He will be stationed at the main office and plant headquarters at 14331 Woodrow Wilson Ave., Detroit, Mich. Detrex also manufactures solvent degreasers and metal parts washers, and the chemicals used for same.

Heater Sales "Start" with an ATTRACTIVE FINISH!

On International Oil Heaters that means MULTIFORM

A finish that catches the eye but not the dust—in store or home—that's Berry Brothers MULTIFORM.

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Ground coat (dark brown) is immediately resprayed with pattern coat (cream) and both coats baked in infrared oven. Heater case is turned in oven to insure a uniform bake on all four sides.

For further information on this attractive MULTIFORM finish, write or phone.

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Quality Finishes Since 1858

Here is an article that I have been working on for nearly six months, first getting the lead from the Mitchell-Bradford Chemical Co. of Bridgeport, Conn., and then securing the data from the right people. It seemed to me an interesting example of how a manufacturer manages who has his processes carried out by several sub-contractors and must protect the parts in transit and between operations.—

Francis A. Westbrook

Rusting and Painting Trouble Corrected

BY F. A. WESTBROOK

AN EASTERN concern recently had a problem in connection with the finishing of 8-in. pressed steel shells for commercial product-filters. The trouble arose at a time when the company was relying upon four outside concerns to manufacture steel shells for its filters.

A firm in Michigan formerly shipped the stamped shells with the drawing oil still covering most of their surfaces. This made degreasing necessary by the spot welder in Cambridge, Mass. Since a wax-base oil carbonizes with welding or brazing, the shells were not re-oiled before sending them to the induction welding shop in Medford, Mass. Handling by different sub-contractors, transportation between factories, and temporary storage at times, allowed more or less rusting to occur. Then, because there was no rust-preventing oil on the shells, the induction welder and brazing concern did no quenching and did not wash off the surplus flux.

By the time the shells reached the paint shop in East Cambridge, Mass., the flux had hardened so that ordinary wire brushing would not remove it. Paint was applied over the flux and often over rusted surfaces. Naturally, a poor finishing job resulted.

Corrective Steps; Coating With Protective Oil

The first corrective step was to find a rust-preventative oil that would be satisfactory under as many of the conditions encountered by shells in process as possible — and particularly an oil that would carbonize as little as possible when subjected to the heat of induction welding. The oil decided upon has a wax base and carbonizes to some extent, as any wax-base oil will, but it permits the welder to quench the shells and wash off surplus flux

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SEALERS SUPPLIES
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Season's Greetings
At this time of the year we pause to extend our best wishes for a Merry Christmas and a Happy New Year to all our friends and customers whose friendship and good will we have enjoyed and for which we are grateful.
☆ ☆ ☆
NEW
PERIOD
Production
Finishes
ESTABLISHED 1917
NEW YORK WOODFINISHERS' Supply Co.
109 IMLAY STREET BROOKLYN, N. Y.

without causing rust. It also has a minimum of tackiness, which is an important advantage here.

The management then instructed the stamping company to remove the heavy lubricant used as a drawing compound, and then to dip the shells in the rust-preventative oil for shipment. At first a white powdery residue was found on the shells—probably due to the remains of a caustic solution used to remove the drawing compound. This was removed by a thorough machine washing before application of the rust-protective oil. It developed that the oil needed to be thinned about 25% with a Standard Oil thinner to avoid excessive tackiness.

Instructions were also given to the spot welding company (which attached "doodads" to the shells) to not degrease the shells, as experience has shown that the welding is practicable without removal of the rust-preventing oil. The spot welding firm was not permitted to ship out any shells without this rust-preventative oil coating. If the firm received any rusty shells from the stamper, or if shells arrived not properly coated, the company was not to process them.

The induction welding concern was advised that all shells delivered to it would be coated with the protective oil; and that workmen would be expected to swab with solvent, only that area which is subjected to heat by the induction welding process. This technique was to minimize and if possible eliminate carbonizing. It was specified that the shells should be quenched in a solution of water and sodium nitrate, and that all surplus flux must be rinsed off. This company was also advised that only clean, rust-free shells would be acceptable.

As a result, when shells arrive at the paint shop they come coated with the protecting oil, are completely free of rust, and are reasonably free of carbon and flux. Instructions were given that if any shells are delivered that do not meet these specifications they are not to be processed without special permission in writing.

Experiments showed that the paint could be applied directly over the rust-preventative oil, but that this was not advisable because of the dirt which accumulates on the oil under conditions of handling, and other circumstances surrounding the shipment of these shells. It was therefore decided that the surfaces should be degreased before painting, as this is more economical than trying to keep them clean.

The painter was also instructed to clean off any possible carbon or flux that might have been overlooked by the induction welder, and to apply rust-protecting oil to all unpainted surfaces immediately after the painting process, before rusting could set in. The paint used is a bake synthetic enamel made up according to the company's specifications. It is applied by spraying.

Since these corrective procedures were put into practice there has been very little trouble in properly finishing the shells. By following these carefully standardized routines the costs have not been increased as there is an important saving from the reduction —almost elimination—of spoiled work. Much better uniformity in the surface coating and general appearance of the product has been achieved; also, improved quality.

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Manufacturers of Protex spray, brush and dipping finishes for all surfaces.

Letters from Readers

Finishing Hughes Flying Boat

We understand that INDUSTRIAL FINISHING Magazine carried an article recently on the finishing of Howard Hughes' flying boat, which is reported to have cost $20,000,000 and carries a pay load of 70 tons. Would you please advise the month this article was published?—J. A. Co.

The article appeared in Dec. 1945 issue, pages 46, 47, 48 and 50.—ED.

"Dipoline" for Dolls

We would be obliged to you if you would kindly let us have the address of a reliable manufacturer of "Dipoline", or a similar prime surfacer as used by U. S. doll manufacturers for dipping their dolls.—M. de B. E., Sao Paulo, Brazil, S. A.

We know of no material by the name "Dipoline". In a letter we have suggested names of concerns who might supply the finish desired. Does any reader have a suggestion?—ED.

"Reynalite" Wanted

We note with interest, in INDUSTRIAL FINISHING MAGAZINE for July 1946, on page 7, under the heading "New Building Materials", an article known as "Reynalite" manufactured by Reynolds Metal Co. May we request you to kindly let us have the address of this firm to enable us to get in contact with them regarding the supply of these "Reynalite" products? — The Perfect Engineering Works, Nagpur, C. P., INDIA.

According to our directory the main office of Reynolds Metal Co. is at 19 E. 47th St., New York 17, N. Y. Of course, the company has plants and branch offices in several different locations throughout the United States. —ED.

Wax for Wood Blocks

We manufacture an alphabet block toy on which we want to put a wax finish on natural wood. We are eager to communicate with any companies that produce such a wax. Can you supply us with the names of any companies that produce a wax that may be satisfactory for this type of production?—P. & W. (Mich.).

In a letter we have named a few concerns that can probably supply wax. Has any reader some further suggestions?—ED.

Bake-Synthetic Screen Process Paints

Our glass division is engaged in the production of a variety of articles such as radio dials involving the silk-screening of designs, figures, etc., onto glass.

At the present, we are using air-drying materials as screening paints. To fit into our production demands and future plans, we are interested in changing over to screening materials of the synthetic baking type. Such materials must, of course, be adaptable to the silk-screening process (be of high viscosity and such that they do not clog the screen) and also give a tough, hard and adherent coating when baked onto glass. A baking cycle in the 200° to 400° F. range from 15 to 45 minutes, would be desirable.

We would appreciate having your comments as to the availability of such materials for our work. A list of manufacturers handling such materials would be welcome.—E. P. Co.

In a letter we have given names of concerns that can supply the materials wanted.—ED.

Yearly Index of Subjects Published in I. F.

Why not publish a yearly index and charge a little for it, so if a man is interested in furniture finishing he could look in the index and he would know what month and what pages to look for? It would save a lot of time. Why not?—E. S. M.

We did this one year, but found that the demand for the indexes—even free of charge—is very small. It takes a great deal of time and careful detail

Remember Pearl Essence for

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MEARLMAID Pearl Essence is being used on hundreds of different products to produce a decorative and attractive effect.

Investigate the numerous advantages of a Mearlmaid Finish before you select the final coating. Its sales appeal and merchandising value are important.

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work to prepare a satisfactory cross-index of articles published during the 12 months in INDUSTRIAL FINISHING Magazine—and there seems to be less than ½ of 1% of the readers who are interested in same. We don't have the skilled help necessary to handle this job, therefore we are obliged to dispense with it. It occurs to us that the few individuals who do desire such an index could prepare one themselves for their own special use.—ED.

Plastic Coating for Wire Screens

We would like to get in touch with T. I. S. (Canada) who, on page 96 of your October issue, express an interest in a plastic coating for wire screens. We have a product which is ideal for this purpose and would therefore appreciate it if you would give us their name and address.—Plastic Coating Co.

Our records show that this inquiry came from the Technical Information Service, (F. G. Green) Research & Development Branch, National Research Bldg., Ottawa, Ont., Canada.—ED.

Corrosion-Proof Coating for Small Metal Parts

We have received an inquiry from a company interested in coating small metal parts with a finish that will enhance their appearance and increase their resistance to corrosion. The coating must be inexpensive and should preferably be resistant to water and oil. It would be applied by dipping and it should be possible to remove the excess, either by allowing the basket containing the small parts to drain or be whirled. We would appreciate any suggestions you can give us as to a suitable coating material. —C. C. Co.

In a letter we are naming a few concerns that make rust-resistant coatings.—ED.

Can Supply High Gloss Aluminum

In the section entitled, "Letters From Readers", in October issue of I. F., we note that one of your readers is inquiring for an aluminum powder to produce a high gloss finish (page 98). We wish to advise that "Britelume" aluminum baking enamels produce a brilliant aluminum finish.

We also have aluminum pastes, which can be used with a lacquer vehicle to produce brilliant aluminum finishes. It is this type in which your reader expressed interest. We shall appreciate your sending us the name and address of your reader marked "Aircraft Co.", so that we may send them our descriptive literature and test samples.—Maas & Waldstein Co.

It's Douglas Aircraft Co., El Segundo, Calif.—ED.

Wood Office Furniture Near Limed Oak

While at the Stationer's Convention in Chicago our sales manager reports the showing, by the Wood Office Furniture Institute, of a new finish similar in shade to a limed oak. They claim that this finish is impervious to marks or stains, and even burns from cigarette butts. Can you give us any information about this new type finish? —O. S. Co.

We haven't specific information at the moment. Will some reader who knows, please write the Editor about it?—ED.

Storage, Pumping and Piping of Material

I would apperciate your sending me any information, illustrations, etc., of systems of finishing materials, stored outside in a separate building from the one in which they are used, piping and pumping the material to the spray booths, etc.—C. Furn. Co.

We have published several articles on this subject but unfortunately our supply of back copies containing such articles is almost exhausted. In a letter we are sending you tear sheets of two articles on the subject. An excellent article was published in Janury 1945 issue, but none of these is available. Also, a good article along this line appeared in April 1937. If some concern or library in your locality happens to have these copies, you might look them over. For further information along this line, we suggest that you communicate with some of the large spray equipment companies. —ED.

Sell Finishes in India?

We take this opportunity of expressing our interest in the import of nitrocellulose lacquers, synthetic finishes, thinners, paints and varnishes for automotive, industrial and decorative finishing, and approach you in

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"A Symbol of Quality *in the Finishing Field"*

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the hope that your good offices will help us in procuring these products from your country.

We have numerous connections throughout India, Burma and Ceylon and are doing extensive business in lacquers and thinners, sending our products as far as Singapore in the far east. We will, in fact, prefer negotiating for distributorship of lacquer and synthetic finishes in these territories and shall welcome an offer from American manufacturers of these products in this connection for which we assure, we shall endeavor to give complete satisfaction in every way; but pending these negotiations, which naturally involve a long time, we would like to know whether they will be in position to supply our requirements against immediate indents for which we shall furnish all the necessary import and exchange permits from the Government of India.

We shall feel obliged if you will kindly ask the manufacturers whom you recommend our name to send us the necessary literature with samples of their latest products. The undersigned is your regular subscriber.—Pearl Finishes Corp., Post Box No. 149, Connaught Circus, New Delhi, INDIA.

Fungus Proof Lacquers

In connection with our manufacture of radios for the export market it is required that the interior of our cabinets be sprayed with a fungus-proof lacquer or wood sealer. It would be appreciated if you would send us a list of paint and lacquer manufacturers who produce items of this type.—A. Radio Co.

Names of several firms are being sent you by letter.—ED.

Roller Coating Machines

Please mail us a list of manufacturers who make roller coating machines. Thank you.—Steel Furn. Co. (N. Y.)

We suggest that you try Rutherford Machinery Co., Division of General Printing Ink Corp., 100 Sixth Ave., New York 15, N. Y., or M. D. Knowlton Co., Rochester, N. Y.—ED.

Peel-Off Coating, "Copeel"

In the section entitled, "Letters From Readers" in October issue of INDUSTRIAL FINISHING (page 98), we note that one of your readers is inquiring for a Peel-Off Coating. We wish to advise that our product, known as "Copeel", was formulated for use similar to what this reader mentions in his letter. We will appreciate your sending us the name and address of the reader marked, "S. J.", so that we may send them a test sample of our Copeel.—Maas & Waldstein Co.

We are sending you John Stanley's address by letter.—ED.

Finishers of Wood Products

In the August 1945 issue of your magazine we noticed a request from H. R. B. on page 4, for the names of wooden toy finishers. We would like to contact this company. Can you send us more information about them?—Nesbit Industries, Inc.

It is The Texas Artcraft, Inc. (Attn: Richard B. Hartman, Jr.), 2310 W. Magnolia St., Ft. Worth 4, Texas.—ED.

Veco Company?

We would greatly appreciate your sending us the address of the Veco Co., as we are interested in doing business with them.

P. S. The last time we did business with them they manufactured paints.—U. L. P. (Calif.).

We do not find any company under this name. Perhaps you mean V. E. P. Co. of Detroit, Mich., who manufactures a product called "Veco".—ED.

Finishers' Hand Creams

Please send us the names of suppliers of hand creams that are used to prevent the staining of finishers' hands.—N. Chair Co.

There is quite a list of such creams, among them being Cadet Creme, Clad, Den-Tex, Derma-Tex, Hand Save, Mitts, Protek, Neo-Film, Skin-Guard, Tex-kin, Vel-Tex, Wham, etc. Names and address of firms that make or sell them are being sent to you by letter.—ED.

Paint That Conducts Electricity

In the October issue on page 96 of INDUSTRIAL FINISHING, there is a reference to Titanine, Inc., manufacturers of "Chromplex" a metallic paint that conducts electricity. We are in need of a paint that can be applied to plexiglass and which will conduct current

COAT LAMP BASES WITH

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A coating of Cellusuede Flock on the bottoms of lamps, pen and ink sets, clocks and other appointments for office and home, not only lends the enrichment of brilliant color and a soft velvety "feel" to the bases, but provides the surface on which the articles are placed with ample protection from scratching or marring. A trial application will show you how easily this versatile material may be handled. Both Cotton and Rayon Flock are available immediately in a variety of colors.

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Cellusuede Products, Inc.

ROCKFORD, ILLINOIS

at 24 volts, and would like to write Titanine to obtain samples and technical information.—Republic Aviation.

I am interested in learning the source of some kind of a metallic paint that can be applied by the silk screen process, and which will conduct electric current (6 volts) when the paint is dry.—ND.

In your October issue of I. F., page 96, "Letters from Readers", there is a letter mentioning a paint called "Chromplex" put out by a firm, "Titanine, Inc.". Would you be good enough to furnish us with the address of this firm so that we can get the technical information and samples?—J. B. & Son.

Titanine's address is Morris & Elmwood, Union, N. J.—ED.

Ford Cup Wanted

We would like to purchase a Ford cup equivalent (for measuring viscosity of finishing materials) but do not know where to get one. Could you give us this information?—P. & D. Co.

We suggest that you try the Vol-U-Meter Co., 73 Wilbury Place, Buffalo, 16, N. Y.

Another concern that manufactures a similar product—the Zahn cup—is General Electric Co., 1 River Rd., Schenectady, N. Y.—ED.

Sheets of Plastic Coatings for Walls

We are interested in purchasing a large quantity of plastic-coated fabric suitable for applying to walls of buildings to take the place of paint. This material would have to be washable and should be the kind of material tha could be put on by paper hangers.

One material that is suitable is known as "Fabron", manufactured by Fredric Blank and Co., 230 Park Ave., New York, N. Y. We believe there are other companies manufacturing similar material and thought that you could supply us with names of companies and also the trade names that they give to their materials.

Would you be good enough to look into this for us and advise as soon as possible whether you can give us the above information, or tell us where we can get it?—B. D. (Painters & Decorators), Canada.

Can some reader suggest the name and address of one or more manufacturers of such products?—ED.

Tumble Spraying Small Parts

It has been brought to our attention that in one of your past issues, there was an article on tumbler spraying. It referred to placing small steel stampings in a revolving tumbler barrel and spraying the contents while they were being tumbled. We wondered if you might be able to refer us to the specific article or possibly advise us where we might get some further information on this subject. —D. H. Co.

Article appeared in March 1946 issue, beginning on page 60. Tear sheets of the article happen to be available and we are sending you a set.—ED.

Will Trade Cold-Rolled Steel for Galvanized

In the November 1946 issue, on page 92, you print under the heading, "To Paint Galvanized Iron", a letter in which "M. D." requests information regarding economical finishing of galvanized iron.

We would like to be placed in contact with the writer of the letter you quote, with the idea of possibly effecting an exchange of cold or hot-rolled steel for the galvanized material.

We are in need of galvanized material. We have some stocks of cold-rolled steel and possibly an exchange of materials could be effected, resulting in benefit to both parties.—Utica Products, Utica, N. Y.

Excellent idea but probably impractical in this case because "M. D." is in California—a long way from New York. In a letter we are giving you "M. D.'s" full name and address.—ED.

Can Supply Sealer-Surfacer for Paper Pulp Forms

Referring to Pressed Product's Co's. inquiry on page 92 of November issue, we have developed and can furnish a material exactly suited to this job.—Harrison Paint & Varnish Co., Canton, Ohio.

C. R. Syer's Article Gets Attention

In the March issue of INDUSTRIAL FINISHING you publish an interesting article by C. Raymond Syer about an installation at the plant of the United Shoe Machinery Corp. in Beverly, Mass.

This article contained a number of

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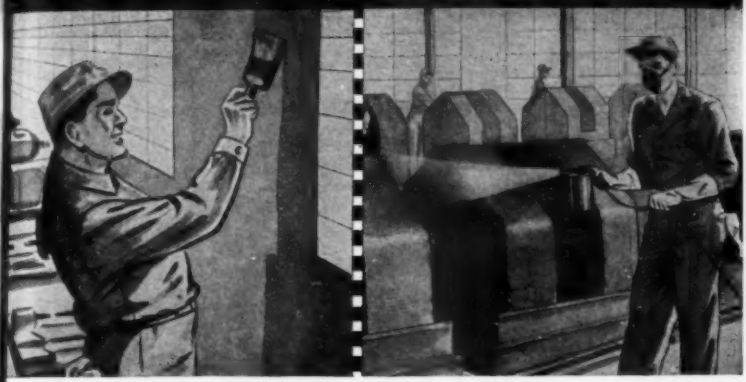

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Although this material has been previously offered to priority claimants, 10 per cent of the merchandise has been reserved to fulfill any further needs of priority claimants including VETERANS OF WORLD WAR II who are invited to contact the Regional Office serving their area.

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503-4

photographs showing overhead conveying equipment with cranes and hoists which were furnished and installed by this office.

We would appreciate it very much if you could supply us with prints of these photos and send up your invoice to cover these—or, if we could borrow the negatives in order to have prints made and return them to you, it would be very helpful to us.—Robert Abel, Inc., (Boston).

Kindly send all available information on the waterwash sanding table referred to in the March issue—the article entitled, "Our Planned Setup for Painting Machine Parts", by S. Raymond Syer.—R. R. C. (Chicago).

We are referring your letter to Mr. Syer and feel sure that he will reply promptly.—ED.

Baking Wrinkle Finish

Please send us available information on the drying of wrinkle coat paint. We are using infra-red lamps at present.—L. Engineering Co. (Mich.)

In a letter we are sending you tear sheets of some articles published on this subject. Also, we are referring you to New Wrinkle, Inc.—ED.

Striping Tool

Please tell us where to obtain striping wheel guns.—N. C. Co. (Mass.)

We assume that you mean striping tools which are used to roll on colored stripes. If so, we suggest K. H. Gettner Shop, Detroit, Mich., or Wendell Mfg. Co., Chicago 18, Ill.—ED.

Conveyorized Finishing Plus Forced Drying

We are planning on the installation and operation, by early spring, of a floor-type conveyorized, forced drying system to handle 200 breakfast sets (set consists of one table and four chairs) daily. Finish would consist of dipping our filler stain coat and wiping by hand, one coat of sealer, stenciling and striping and then final lacquer coat. Approximate area to be confined to a minimum. However, we can alot a space 30x100-ft. and perhaps more if necessary.

Would appreciate your submitting our requirements to a number of your advertisers who specialize in such equipment.—G. W. (Name and address on request).

Metallizing Guns

We want to get the names of firms who manufacture aluminum metal spraying equipment for use in rebuilding dies. Any literature which you may have on the above subject would be appreciated.—G. T. M.

We assume that you mean "Metallizing guns" for spraying hot metal. If so, there are four or five such concerns—perhaps more. In a letter we are giving you their names and addresses. One is Metallizing Co. of America, Inc. Jersey City, N. J.—ED.

For Auto Refinishers

The 1946 Fall edition of Duco and Dulux Refinisher News contains accurate information on matching colors to use on all makes of cars, for the years 1940 to 1946 inclusive. The book has 44 pages 8¼x11-in. For a free copy, write E. I. du Pont de Nemours & Co., Finishes Division, Refinish Sales, Wilmington 98, Dela.

Full-Color Booklet Shows Reproduction Finishes

A full-color booklet, marking a new advance in plastic finishing, is being distributed by The Meyercord Co., Chicago decalcomania manufacturer, to illustrate wide industrial uses, flexibility and application of the firm's wood and marble recreations in plastic veneer.

Furniture and cabinet makers report that Meyercord plastic finishes cannot be detected from originals. Their use speeds production, cuts cost and provides, in quantity, many patterns of rare wood and stone otherwise unobtainable. Manufacturers may specify finishes resistant to wear, abrasion, alcohol, impact or constant washing, applicable to wood, metal, composition or plastic surfaces. Application can be made to flat metal before die shaping or drawing, permitting the predecoration of fabricated goods without tearing, marring or marking.

Product finishers and designers will find the Meyercord booklet a colorful manual of ideas for radio cabinets, furniture, lamps, chests and even caskets, with veneers in wood finishes, stains and grains, in marble, onyx and leather. The new product can be used as all-over finish, as banding, or trim, or in combination with inlay.

Copies of the booklet will be mailed to interested executives writing on company letterheads to Meyercord, 5323 W. Lake St., Chicago 44, Illinois.

The snail makes a habit of switching shells. Tiring of his own, he'll crawl into any shell that's handy. His coating problem is easy to solve.

Perhaps your surface coating problem is more difficult. It won't be if you specify lacquer. It's the finish that's easy to apply. It air-dries fast, without costly drying equipment. It's attractive, durable, tough. Your lacquer supplier would like to tell you about it in more detail.

No Coating Problem here!

COMMERCIAL SOLVENTS
Corporation

CSC makes solvents and plasticizers, but is not a lacquer manufacturer.

Questions and Answers

Finishing Croquet Balls and Mallets

We manufacture a medium priced croquet set which we desire to coat with a high gloss natural finish, and stripe with a brilliant color. Our product does not have the desired finish — and so many salesmen in this territory have the writer confused.

We have tried tumbling, dipping in volume and, as a last resort, dipping each ball and mallet on a string. In spite of every attempt, the material tends to pile up, such as the last drop on the bottom of the ball. We tried lacquering our product but blushing, because of dampness, made this operation unprofitable. At the moment we are using a vinilyte finish which does not blush, but the finish is not brilliant enough.

Could you recommend a manufacturer of lacquer, or a machine which could be used to handle in volume the ball which is 3¾-in. in diameter and a mallet 2¼x7-in.? —W. P. Co. (Gulf Coast City).

Perhaps the reason your suppliers' representatives have not mentioned possible cures is that certain ingredients of good finishes have been taken from the market—or very limited quantities are obtainable, and in some cases the price of these items has forced manufacturers to use substitutes the behavior of which can not be reliably predicted. I believe that a clear material could be had which will drain well and leave a good finish, provided care is taken—not with the dipping of the balls and mallets, but with the materials.

To properly dip a quality product, control of the finishing material is most important. The temperature should be constant, as this is in direct relation to the viscosity of the material. The viscosity should be checked at least once an hour at a given temperature; and when necessary, suitable solvents or diluents should be added to keep the material as near the proper viscosity as possible.

The problem here, it seems to me, is that the balls and mallets are at a temperature that is above or below the material temperature. In production, the parts being dipped change the temperature of the paint and thus change its viscosity.

In your letter you mention dampness and blushing. The humid condition of the air from day to day will have its effect on final results. Your finishing room should be kept at a constant temperature and relative humidity, or the daily results will vary accordingly.

To dip any product and get good results continuously, it is necessary to establish rigid controls. This point is often neglected. The elements of controls necessary to the constant good behavior of paint finishes are:

1) Uniform temperature of finishing room.

2) Uniform temperature of

STILL ANOTHER RANDOLPH ACHIEVEMENT!

Durable light-proof wood lacquer for interior and exterior use.

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FINISHING PRODUCTS CO.

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parts being dip-coated.

3) Uniform temperature of finishing material being used.

4) Uniform viscosity of paint at a given temperature.

5) Check-up on viscosity of paint at regular intervals.

6) Additions of proper solvents or diluents after viscosity check-up to compensate for normal loss by evaporation from open tank.

7) Tests of each batch number of paint received, and proper alteration of mixture to meet the standards set up.

8) Constant inspection of parts, and coordination of inspection with authority over paint mixtures.

9) If a chemist is employed to control the dipping operation he will add chemicals to increase or decrease the surface tension of the material as needed. (This primarily is for slow withdrawal of dipped parts from paint fluids.)

10) Proper agitation of pigmented paint to keep it properly mixed.

The temperature of air in the room and the temperature of parts being dip-coated can be established by considering normal conditions about the area. No special care is required unless subnormal temperatures or wide ranges of higher temperatures prevail.

The uniform temperature of finish materials in the dipping tank is most important. This can be established by tests conducted with the temperature of parts at the normal room temperature.

Viscosity of the material can be taken with a purchased viscosity cup or a home-made device of similar construction. Viscosity is taken in seconds, so a stop watch is required.

The addition of solvents or diluents to replace the normal loss is very important. What material to add can be determined by consulting your paint supplier.

Tests of each batch number of paint or lacquer should be made, as the paint may vary slightly from one batch to the next. This test should be conducted the same as mentioned in the first paragraph of my reply.

Constant inspection of parts is necessary, as various changes of temperature, viscosity, humidity, air drafts, open doors and, in fact, anything in general can change conditions which might affect the flow of the material after it leaves the dip tank. Constant inspection saves rejects. It is cheaper to shut down a production line rather than continue to manufacture rejects.

The coordination of inspection, with the authority over paint mixtures is vital to success. Reporting conditions promptly after frequent inspection, rather than waiting for a complaint about results, will enable corrections to be made before serious trouble shows up.

Where a chemist is employed to control the situation, the best results are obtained. A chemist knows or should know how to handle the entire problem. Where a chemist can not be employed, someone in charge of finishing should become familiar with as many facts about the paint materials being used as is humanly possible—and then proceed accordingly.

Agitation of pigmented paint in the dip tank is very important to good results. There are several ways of doing this, depending upon the paint being used. I feel that clear finish materials should have some mild agitation to get good re-

(Continued on page 100)

HILO

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- *diffuse direct light rays*
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sults on most products being dipped.

I am one who believes that any product, regardless of shape and assembly methods, can be dipped successfully—provided you have the time and are willing to install the necessary equipment to do the job. Too many items are produced too fast to allow time for such operations.—PETER WOOD.

There are several methods of finishing that may be employed, depending on the equipment available.

If the proper blush-resistant lacquer is purchased and used with suitable thinners and retarders (and these can be obtained from any of the larger reputable lacquer manufacturers) I suggest the use of either automatic spray or hand spray application on a revolving mallet head or ball on a small conveyor system.

The ball should be placed on a three pin point suspension jig equipped at the bottom with a small pinion so that when the pinion reaches the spray booth, it meshes with a gear or chain that will cause the pinion and ball to revolve during the spray operation. After the lacquer is applied, the conveyor could be passed through a small force-drying tunnel for two to four minutes, or air-dried on the conveyor for seven to ten minutes. The balls may then be placed on a long table with enclosed sides so that they will slowly roll toward the lower end and fall into boxes after about five to eight minutes of additional air-drying.

The mallets could be racked, sprayed, force-dried or air-dried, and packed when dry. Preheating the wood slightly will help prevent subsequent blistering of the finish on force drying.—O. J. HARTWICK, Chief Chemist.

The finishing procedure now used by a large manufacturer of croquet balls in Indiana is about as follows:

First, place the balls in a tumbling machine; then add clear synthetic primer. Then follows the normal procedure used in tumbling.

After the balls have been dried, a small screw-eye is placed in each ball; then the balls are dipped in synthetic enamel. The finishes are all solid colors. After the balls have been dipped and allowed to drain, a workman takes a brush and removes the last clinging drop of enamel; then the balls are air-dried.

In their finishing of these balls, the company finds many small holes similar to bird pecks and small knots. They fill these holes with white synthetic putty, after the tumbing process, and before the final dip coat.—G. F. Funk.

My thoughts are as follows: Regarding your trouble with lacquer blushing, possibly conditions during the past few years have been such that it was necessary to use second grade solvents. I am sure that if this is your only complaint with lacquer, it can be easily eliminated.

A concern in Chattanooga does a similar operation by dipping and then twirling the excess material in a centrifuge (which simply amounts to the same thing as tumbling), and then force dries the finish for one hour at 140° F. It is necessary, however, to give two coats when this method is employed. The finishing material used is varnish. *(Cont'd. on page 102)*

S.A.
Sorry if we misled you, but we're thinking in terms of Sales Appeal. Sales Appeal as only a distinctive, eye-catching finish can bring . . . Here in our Creative Studio, a complete staff of experienced artists are ready to give your product new life and more of that appeal. They will conceive a finish that will blend appropriately with its lines and design . . . greatly enhance its most striking characteristics.
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Manufacturers of Protective and Decorative Coatings

A relatively new process that I understand is being used on small wooden articles, such as those you make, is dipping in gel lacquer. We have done some experimental work on this in the laboratory, and it certainly does look nice. However, we don't have any customers using the material at present.

The process requires heating the lacquer to a temperature of 135° F., then dipping. The material dries both by gelling at room temperature and by evaporation of the solvent. Thus you are able to produce a lacquered finish with the high luster of varnish. Here again it is necessary to use a 2-coat system, the first being a conventional type of sanding sealer.—RAYMOND C. ADAMS, Technical Director.

We have never had any experience, to my knowledge, in finishing croquet balls or mallet heads but we have had experience with bowling pins, golf clubs, and other instruments of sport which have to take a pretty good beating. We have a baking wood finish called Wood Polymerin which has given outstanding performance in this type of work. It yields a tougher finish than is obtainable with lacquer, and since it sprays at nearly twice the solids of a lacquer, it builds very fast, giving a sharp gloss and a full looking appearance to objects on which it is applied. However, it requires a bake, and if two coats are applied, the first one should be baked 30 to 40 minutes at 150° F., and the second one an hour at 150° F.

We have two customers who manufacture golf clubs who acclaim this material very highly for shock resistance. Insofar as application is concerned, it seems to me that the best way to finish croquet balls would be the way they finish golf balls. The balls are fed into an automatic spray unit and are carried through the guns on a conveyor on which they rest, suspended on a tripod consisting of three sharp-pointed nails. The sharp points of the nails do leave a mark, but it is practically invisible. Since the balls have to receive two coats anyhow, their position is changed on the second coat so that the three pin points caused by the nails are covered with the second coat.

This method of application gives a very uniform coating without sags, runs, or beads. Any manufacturer of automatic spray equipment could supply such apparatus. In the use of Wood Polymerin, of course, an oven is required to supply the necessary drying heat, and in addition to the heat, it must be supplied with humidity in order that pinhole blistering of the film will not occur during baking due to the evolution of moisture and other volatile ingredients from the wood.

It occurs to me that the mallet heads could be handled in the same manner and on the same equipment.

Wood Polymerin can be made to dip as well as spray, but apparently the customer has tried dipping and feels that it is clumsy and yields an unsatisfactory finish.

Admittedly, the above suggestions involve the expenditure of money for automatic spraying equipment and ovens, but in our opinion such an expenditure would be well justified by the fact that the finished articles may be assembled and packed immediately after coming out of the oven, and the quality of the finish will be much better.—PAUL O. BLACKMORE.

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Aquella is a mineral waterproofing for masonry above and below grade, interior and exterior. It is a product of Balesco Chemicals Division of the Baltimore Service Engineering Co., Inc., 2002 St. Paul St., Baltimore 18, Md.

Small, Trigger-Quick Fire Extinguisher

A new midget fire extinguisher has just been announced by American - LaFrance - Foamite Corp, of Elmira, N. Y. It is called the Alfco Speedex — with contents weighing less than 4-lbs., but which expand upon release to 450 times their contained volume.

It is slightly over 3½-in. in diameter, with an overall length of 22-in. It is operated by quick acting squeeze-type valve which releases the carbon dioxide extinguishing agent by palm pressure.

Speedex carbon dioxide gas is non-poisonous, non-corrosive and odorless. It is a non-conductor of electricity, and will not freeze at any climatic temperature. It is heavier than air and will not support combustion. An ideal medium for putting out small fires in oils and greases, and in small electrical hazards. It is shipped fully charged with wall hangers, screws, and record tag.

Water Curtain Spray Booth Available in K. D. form

The Newcomb-Detroit Co., 5741 Russell St., Detroit 11, Mich., announces the new Water-Tube Spray Booth. It is a complete unit and is 90% pre-assembled when delivered; only the spray area enclosure and the stack are in "knock-down" condition. It is claimed that the Water Tube Spray Booth eliminates 80% to 90% of the assembly time normally required in the customer's plant. In addition pre-assembly permits the manufacturer to give each unit trial runs prior to shipment.

The Water Tube Spray Booth is a water curtain type of booth and incorporates the use of a series of tubes to clean the paint-laden air. Inside each tube are two high velocity, clog-proof nozzles which wash the air twice. The air is then drawn by suction through moisture separators and discharged.

An important feature of the design is that the discharge fan is built-in. This eliminates the necessity for construction and installation of an overhead platform, mounting the fan, motor and drive on this platform, and the tedious alignment of this equipment with the suction pipe running from the top of the booth. It also permits easy movement of the entire unit when necessary.

Also, the water re-circulating pump and motor are mounted directly to the tank, making an integral unit. This permits assem-

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INDUSTRIAL FINISHING Magazine

142 North Meridian Street **Indianapolis 4, Ind.**

bly of the pump suction and spray header prior to shipment.

Available in five sizes, these units may be used individually or in combination and for unit or production line paint spraying. Complete details are contained in a new 16-page catalogue now ready.

"Klean Strip" Finish Remover

According to the manufacturer, "Klean Strip" is a non-inflammable wax-free remover that acts quickly and requires no after-wash. It "breaks" the paint film instead of dissolving it, and it doesn't harm the grain of wood or wood filler. It is safe to use anywhere and it saves labor.

Removes paint, plastic coating, synthetic enamel, lacquer, varnish, shellac, etc. The manufacturer is W. M. Barr & Co., P. O. Box 3518, Memphis, Tenn.

Portable Vapor Degreaser

An improved vapor degreaser, embodying an ingeniously controlled cool-air principle, has been developed by the Mabor Company of Clark Township, Rahway, New Jersey. The equipment requires only a plug into power to start its operation. It is fitted with heavy duty casters so it can be used as a portable unit.

The degreaser is self-distilling and completely self-contained, thereby eliminating the need for an outside container. Built-in storage tanks are provided as part of the unit. Its contents can be distilled without danger of overheating.

By increasing the flow of cooling air, vapor level oscillation is substantially reduced. As a result, the consumption of solvent is also reduced proportionately.

An extra heater helps to increase the vapor formation and overcome the shock load as work is placed in the machine.

It is efficient even on light metals, as a hand hose and flush pump (supplied with the machine) will take care of lighter gauges which do not condense enough solvent vapor for effective cleaning.

New Antifouling Paint

A new paint that protects a ship's bottom from barnacle infestation and eliminates the necessity of frequent dry docking to remove barnacles and other marine-growth, has been developed by research chemists of Battelle Memorial Institute, Columbus, Ohio.

Developed after 3½ years of research, the paint owes its effectiveness to metallic copper which, in combination with other ingredients, renders the painted ship hull poisonous to marine-life attack. It has proved effective in preventing barnacle infestation in fouling water for as long as two years. This is about four times the service life of ship-hull paints meeting ordinary specifications. It may be used over metal or wood; it gives equally effective protection in both cases.

Fouling reduces the cargo load the ship can carry and greatly reduces its speed and efficiency. Within six months from the time a ship is cleaned and painted in dry dock, barnacle infestation often increases the ship's fuel consumption as much as 50%. Because of the severe losses in operation efficiency, it is often necessary to dry dock

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Rayco Flock (uniformly controlled particles of cotton, rayon, hair) produces finishes of amazing variety, in any colors, on virtually any base material. Widely used in airplane, auto, furniture, camera and many other industries. Book shown below is your key to this "process of infinite possibilities."

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ships about every five or six months when they are sailing in fouling waters.

The Battelle-developed antifouling paint resulted from a program of research sponsored jointly by a group of copper companies. The paint is now being manufactured by the Amercoat Division, American Pipe & Construction Co., with offices in Los Angeles, Chicago, and New York, a licensee of the patent rights.

French Paint Makers Visit Hilo

A delegation of 17 members of the Paint and Varnish Association of France were guests of the Hilo Varnish Corp. recently.

The invitation to study Hilo production methods had been extended the Frenchmen by Mr. Carl J. Schumann, president and Dr. Joseph J. Mattiello, technical director and vice president of the company, during the recent National Paint, Varnish & Lacquer Association Convention in Atlantic City.

The delegation, headed by M. Lucien Ravel of the Pyrolac Co., France, was divided into small groups and conducted through the factory by Mr. Schumann, John Schumann, Dom Razzano and Harry Stalzer.

Yarnall Adds to Lab. Staff

The Yarnall Paint Co., announces a number of additions to its laboratory staff. These include:

Robert Mac Creight, chief chemist, who has had 23 years of laboratory experience.

Horace Bentley, special technician. Mr. Bentley recently received his honorable discharge from the U. S. Army Air Force. He has had seven years paint laboratory experience.

Three laboratory assistants were also added.

New Brushing Lacquers

Hercules Powder Co., Inc., Wilmington 99, Dela., has prepared an attractive and informative bulletin of interest and value to users and formulators of nitrocellulose lacquers. The book contains 12 pages 8½x11-in., bound between 3-color covers. It's free.

Test lacquers already prepared by these new formulations have exhibited good brushability, odor, flowout, and nonlifting properties. Solids may be varied, as is done in spray-type nitrocellulose lacquers, to give films with the desired properties. Clear brushing lacquers of 30% solids can be attained, and this may be raised to 35% and over in pigmented lacquers. The best brushing results have been obtained with a lacquer viscosity of 50 to 60 seconds, as measured by a No. 4 Ford cup.

Left to right: Carl Schumann, president of Hilo; Lucien Ravel, vice president of the French group and Dr. Joseph Mattiello, technical director of Hilo.

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Random Comment on the Industrial Scene

(Continued from page 9)

Industrial Harmony—Only when labor, capital and consumer are brought into balance and harmony, through harmonious co-operation directed toward real efficiency and lower costs, will America's labor problem be satisfactorily solved and continued progress made. That is the thought-provoking assertion made by P. W. Litchfield, board chairman of the Goodyear Tire & Rubber Co., in his new book, "The Industrial Republic."

Reasoning from a record of American progress through coordination of productive effort, this noted industrial spokesman writes:

"We are a mass-production, engineering-minded people, who have joined men and machines to multiply output and make our country an efficient, low-cost producer. We have thus been able to offer more customers better things at lower cost. Americans eat better and are better dressed and housed than any other people, and our transportation facilities are far in advance of the rest of the world.

"If man is to enjoy more, his labor must progressively produce more, not less, in a given length of time. Labor must make its hours count for as much as possible, and management must supply the best tools and facilities it can . . . The limits of potential business are bounded only by human wants."

* * *

Understanding Vital—In similar vein are the reflections recently voiced by Herbert H. Rogge, vice-president of the Westinghouse Electric Corp., who declared that "business stands on the threshold of a new frontier, and if we can successfully open this frontier we shall embark on a new era of real progress . . .

"The American system has steadily provided more jobs, more pay, more benefits for all people. It has become the undisputed champion of the world because it has produced the world's greatest industrial leaders. Now this leadership faces its greatest challenge and its greatest opportunity. This is the vital need for mutual understanding and for living compatibly with organized labor. It is vital for management, for labor and for the public interest."

* * *

Silicone-Base Paints—Dow Corning has tested paints made from silicone resins and aluminum powder on diesel manifolds and furnace doors at temperatures as high as 600° F. Speaking of silicone-base paints, *Materials & Methods* reports that engineers developing the new silicone paint for automotive finishing say it will give a lifetime coating, retaining its color and gloss indefinitely. "In fact," *M & M* adds, "brighter and clearer colors will be obtainable. They say, too, it will stand more punishment than previous finishes."

* * *

Glossy Finishes on Aluminum—Chemoxiding, a new aluminum-treatment process developed by Colonial Alloys Co., is reported to produce glossy finishes which are relatively hard and corrosion resistant on all of the aluminum and aluminum alloys. Processing cycle includes short-time degreasing, cleaning, Chemoxiding and rinsing; colorings range from light gray through marbleized to light brown, depending upon timing and

QUALAVITE

tested for Resistance

QUALAVITE has been formulated to produce a finish that will positively resist the ravages of alcohol, water, moderate heat, abrasion, impact and will not scratch white seven days after application. This super lacquer has been laboratory tested to stand the "gaff." It is hard and retains its flexibility and permanency indefinitely. QUALAVITE is as modern as the atom bomb. If you do not know QUALAVITE 100E, then your use of it will prove its efficiency. Write for quotations.

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QUALASOLE

QUALATONE PRODUCTS INCORPORATED

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alloys used. Service life of pots for melting and casting light metal alloys, such as aluminum and magnesium, has been increased from four or five days to several weeks by coating them with porcelain enamel, according to *Porcelain Enamel Items.*

* * *

Stainless-Clad Steel—Automobile bumpers and other accessories formerly made from chromium plated steel or die castings can now be successfully fabricated from stainless-clad steel, according to Fred T. H. Youngman, president of Jessop Steel Co., Washington, Pennsylvania.

Bumpers, bumper guards, gravel guards and other automobile parts made from stainless-clad steel will not chip, flake or peel. They have a permanently rust-free surface. The stainless cladding can be polished to a high finish and will retain its pleasing appearance during the life of the vehicle. The mild steel backing of the accessory can be lacquered to protect it from corrosion.

* * *

Beeswax Served Well — Goose grease, skunk oil, and sulphur-medicants that kept grandfather alive while he was a boy—may be smirked at by modern doctors, but modern industrial finishers should not smirk at grandfather's use of beeswax to protect metals. Take for instance the suspension bridge near Oroville, Calif. This 240-ft. bridge, spanning Feather River, was built in 1856, way back in the gold rush days. The two 3-in. cables supporting the bridge are each composed of 300 strands of No. 10 wrought iron wire. At the time of manufacture, each wire was thoroughly coated with beeswax. No other coating was used. This protection successfully withstood the elements for 59 years. In 1915, the cables were inspected, given a coat of aluminum paint, and are still going strong.

* * *

More Natural Rubber — Science with its test tubes may have won the war, but Mother Nature is going to keep a finger in the economic pie for a long time to come. Right now our $700 million synthetic rubber industry is trembling before the Old Lady's wrath. In 1939 it is recorded that 990,000 tons of natural rubber were produced; estimates place 1946 production at 975,000 tons. Next year, experts claim, approximately 1,400,000 tons of the natural product will be available.

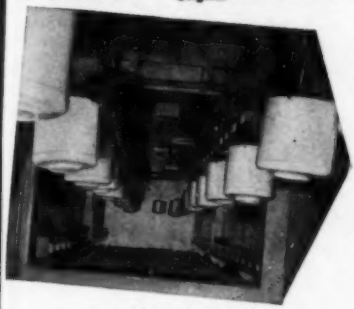
Synthetic rubber is priced at 18½ cents a pound. There is every indication that the huge supply of natural rubber anticipated will drive its price several cents below this figure. This means either closing down a large part of the Government-controlled synthetic rubber industry, or lowering synthetic rubber prices and subsidizing the loss.

New Reflector Lamp Line

Nine types of Lustra Reflector Lamps for industrial, commercial and display lighting, are illustrated in the new Bulletin No. 101, "A Better Kind of Lighting," issued by the Lustra Corp. of America, 40 W. 25th St., New York 10, N. Y.

Construction features include solid silver reflector linings sealed inside the bulbs, neck-reflector disks, precision-focused filaments, and daylight spray for color-corrected illumination where desired. Sizes 25 to 1000 watts for 115 to 125 volts, and up to 250 volts on the general lighting service types.

A Faultless White Finish
IN 11 MINUTES
with
BURDETT The Original INFRA-RED GAS BURNERS



Here again, as in the innumerable other cases previously presented, Burdett Infra-Red Gas Burners have reduced drying time approximately 70 per cent as compared with indirect-fired drying. In this Gray Company, Inc., Minneapolis installation the prime coat is run at 235° F., for 11 minutes and the finish coat at 265° F., for 11 minutes. These startling results are common practice with Burdett Burners. These same revolutionary results are possible in your drying, baking, roasting and cooking —metal melting and annealing operations—ask for complete information.

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Mac's

FASHION CRISTALITE LACQUERS and SEALERS

Are especially formulated for the light blonde or bleached finishes. They are "water white" and do not impart any color to the surface.

They have high solids content and produce excellent body. They will not mar or scratch readily and can be sanded in one hour.

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Editorial

End of Year 1946; A Look Ahead

★ The year is just about all over — all over but the shouting on Christmas and New Year's eve, when most of the boys and girls will be out to parties, and other hilarious doings will be on the program.

To the finishing executive, the end of the year just means inventory and the beginning of another day's work after the celebration is over. He looks back on events that have occurred and contemplates the past with its eternal hodge-podge of super problems becoming super-super with time.

What does the coming year hold for the finishing department? What new techniques will some genius invent for the beautification of the merchandise which is to be sold as 1947 style goods?

These things are very visible and they are coming to the front in leaps and bounds:

1) More mechanization and installation of semi or completely conveyorized finishing rooms, on an increasing scale.

2) An effort to eliminate obnoxious smells from paint, which is closer than one would believe.

3) New types of thinners; higher quality and lower costs.

4) Improvement in the definition of plastic type paints.

5) Improved safety devices and fire-fighting techniques.

6) More serious thought given to the health of employees, with more group life insurance and health insurance plans to include the employees' families as well.

7) More thought given to quality of finish than ever before.

8) More factory-trained finishers will be trained for outside sales jobs, representing their firm on the road, etc. Their knowledge or lack

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

Our Best Wishes
for a
VERY MERRY CHRISTMAS
and a
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NON-INFLAMMABLE
« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives
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ORDER TRIAL GALLON AT DRUM PRICE

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings from any surface or material . . costs less to use . . saves time, labor and material.

BRUSH CLEANER I. C. D.—Non-inflammable brush cleaner works fast . . does not injure nor loosen the bristles. Easy to use . . leaves the bristles clean as a whistle. Order a gallon can and convince yourself.

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of knowledge will be of considerable importance in competition for business.

9) Finishing materials will be available, but still tight. There is still quite a bit of Government hoarding — for all is still not quite tranquil.

10) Money will get tight because of high prices. Many firms will have to shave off part of their profit because labor will fight a cut in earning power and a long shut-down might be more costly than a slight dip in profit.

11) Management will take more of an interest in labor than ever before and will find that most of its employees are reasonable and respectable.

12) There will be a trend toward lighter metals, such as aluminum — and possibly magnesium if the latter can be shown to be less of a fire hazard than it seems.

13) There will be a drive from within labor unions to clean out the leaders who have as their guiding star the philosophies of a country overseas. It will be quite an affair.

14) Finishing personnel, management, key men and craftsmen can do a great deal toward improving the standard of living for our great country by using their skills to provide abundant and good quality production of all the items within the realm of their craft.

In conclusion, I wish all concerned Happy Tidings on the New Year.—NORMAN ABRAMOVICE.

"Liquid honing" is a process of polishing metal. It is based upon the use of a fine abrasive in a chemical emulsion which is discharged by compressed air against the surfaces to be polished.

Fit the Cleaner To the Job!

★ Are you coating steel with black oxide? Painting or plating die castings? Anodizing aluminum or magnesium? Having trouble getting the premium quality finish you want? Rejects rising? Chances are, other factors being equal, that the source of trouble lies in improper or inefficient cleaning, occasioned probably by the use of the wrong type of material.

No matter what type of production finishing you are doing—and regardless of whether the product or part is fabricated from a ferrous or non-ferrous metal or alloy—adhesion, durability and uniformity of protective coatings or decorative finishes are dependent upon consistently thorough, uniformly dependable cleaning. Experienced finishing superintendents and shop foremen agree that this is a basic requisite to trouble-free finishing results.

One might even go further and say that to obtain maximum efficiency and economy of surface preparation, pieces in process must be cleaned with a material or method that "fits the job."

In choosing a metal-cleaning detergent, the type of grease or dirt to be removed, and the metal to be cleaned and the equipment available for handling the work are, among others, the chief determining factors. Removal of polishing and buffing compounds or drawing and stamping lubricants, for example, frequently requires a material different from what is used to remove light machine oils.

It may be found—as is often the case with zinc alloy die castings—that simple electrolytic alkaline cleaning is not completely

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satisfactory due to the inherent danger of "over-cleaning" some areas while removing heavier grease films from other places. Again, it is not unusual, in automatic setups especially, for buffing compound entrapped in recesses, to "cake" and harden due to heat generated in buffing. Softening and loosening of such deposits may require solvent pre-soaking before electro-cleaning, thereby making the cleaning job a 2-step process.

Take aluminum for a moment. Here you have special cleaning problems which may or may not require the application of special materials. If the work is to be coated with an Alumilite finish, for instance, various cleansing agents such as organic solvents or mild inhibited or "buffered" alkalis may be used, depending upon the character and extent of the deposit present.

If a buffed surface is to be cleaned, it is imperative to select degreasing agents or conditions that minimize any attack on the aluminum. If a paint, lacquer or enamel coating is to be applied, then solvent vapor degreasing, specialized alkaline cleaning or phosphoric acid cleaning and conditioning may be required, this again being determined in the final analysis by individual conditions in any given instance.

Type of equipment available likewise comprises a factor that invariably influences selection of the cleaner to use. Automatic pressure washers, vapor degreasers, dip or immersion tanks, electro-cleaning equipment, abrasive airless-blast machines—all have their proper places in the scheme of things when it comes to preparing metals for finishing, and each requires the use of a particular type or class of cleaning agent.

The question of selecting the proper type of cleaning medium need offer no perplexing problem to the industrial finisher. A wide range of materials, including alkaline, acid, emulsion and chlorinated solvent types, is available from several reliable sources of supply—many of them regular advertisers in this magazine—to meet most every conceivable pre-finishing, surface-cleaning or parts-degreasing problem.

A wealth of practical data, based on both laboratory research and plant experience, may be secured free for the asking from many different reputable suppliers. Representatives of equipment producers and chemical manufacturers welcome the opportunity to help you select a cleaner that fits the job, and also advance suggestions for increasing the efficiency and economy of your cleaning cycles. Their suggestions and ideas stem directly from their own personal everyday work in successfully helping other finishers lick similar or related production problems.—S. J. TREZAC.

Are We Too Careless To Do Good Work?

★ Most Americans are so busy with their work that they do not pay much attention to some of the things (conditions if you will) that are slowly but surely going on around them. This American trait is nothing new. It has been going on for a century or more. In the past we as a Nation have always pulled up sharp to collectively do something about it before it was too late. It is hoped that this facil-

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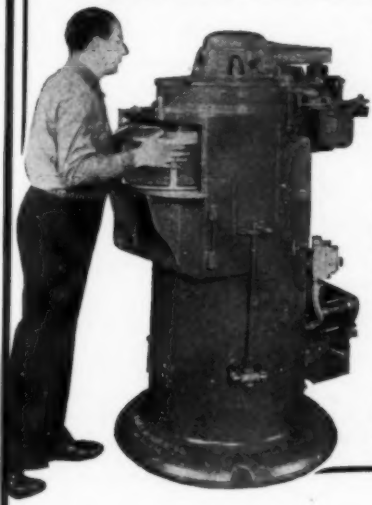

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ity for corrective action will continue.

Internationally, nationally and industrially speaking, these are very trying times. Recently the head of a large and successful manufacturing concern declared that, never before in the history of the business had he ever seen so much good material being spoiled by poor workmanship. His remark was not facetiously made. He was both thoughtful and serious. He was concerned over a situation for which he had no solution. It was and is a serious indictment.

It is also believed that this executive is not alone, except perhaps in his honesty in facing a serious condition now and admitting it. Isn't it high time that collectively we get rid of the "anything goes", "they'll buy anything", and the "don't care" attitude, and substitute pride in accomplishment and pride in product? The plan for greatness lies with each individual. The remedy lies with the men and women of industry. Let us do something about it before it is too late.—C.P.B.

Avoid After-Holiday Speed-Up Program

★ With production schedules to be met, the finishing foreman almost resents holidays, vacations, and similar upsets in routine. Too often his main thought is to get back to normal as quickly as possible and make up for lost time.

Actually, however, that lost time may be a good thing for the workers. It permits them to restore their energy and enthusiasm by a change they have earned and usually need.

Insofar as possible, the wise foreman will avoid too much rush work and overtime immediately following holidays and vacations. This he will do as much for himself as for the individual employees. The effects of extra opportunity for rest and relaxation may be quickly lost if followed by a heavy schedule. In comparison, carrying out only a normal schedule for a while after time off will extend the benefits considerably longer.

To some extent, the foreman has this decision to make every time holidays or vacations interrupt the even flow of production: Should he try to get more work from his men as soon as they return to the job, in the hope that total output will offset the lost time? Or should he consider holidays and vacations as an investment in future efficiency, and avoid allowing the effects to wear off too quickly?

In general, labor resents any attempt to step up production, and thereby take away what they have gained by a short release from their regular routine. Management would also profit by taking the same attitude. In fact, better spacing of plant holidays and prolonging the good effects by careful control of production immediately after these times would be helpful in: 1) building up sustained efficiency over longer periods; 2) reducing nervous tension, and 3) cutting down labor troubles that arise out of job monotony and dissatisfaction.

Holidays and vacations cost the finishing department something in the way of lost production at the time. However, all of this will be made up with a profitable margin to spare, if management cooperates in prolonging the good effects. —G. M.

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Attractive Appearance Sells More Products

★ Finish and appearance are first cousins. It is only natural for a prospective purchaser to select the more attractive of several products, assuming that other essential factors are relatively equal.

The psychology of "eye-appeal" has long been recognized; it holds even greater importance today. In the consumer field, the automobile affords a familiar example. You will find that sales appeal behind this product is preponderantly on the side of streamlined styling, color harmony, upholstering texture and the like.

The same trend has invaded the industrial field too. An interesting case in point is that which occurred a few years back, when one particular manufacturer introduced to his trade a new hand tool.

Of unusual merit mechanically, it appeared to be just another "run-of-the-mill" tool. As a result, sales were considerably less than anticipated. Then something happened. The tool was redesigned completely, from "stem to stern", this time with the accent on appearance. Almost immediately sales soared; the tool was soon on its way to popular acceptance.

All along the line, products old and new are being dressed up to sell. They've cellophaned everything from apples to apricots; they've streamlined trucks and trains; they've redesigned radios, refrigerators and 1001 other products, to make them sell in greater volume.—A. P. SCHULZE.

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Clean All Surfaces Before Finishing

★ The problem of surface preparation always appears when any kind of protective or decorative coating is being considered. All fine finishes require cleanliness of the surface before processing. Some may need only a good general cleaning as is often the case in painting. Others, however, call for infinite care in removing all traces of foreign matter.

Whatever the degree of cleaning required, the men in charge of finishing must always keep uppermost in their minds the fact that the right route to the right finish begins with the right start. Here is the point where the road to quality control on the production line begins. You can use the best quality finishing materials obtainable; you can apply them with the most efficient equipment available; but all goes for naught if the metal surface has not been previously cleaned, prepared or properly treated.

What a solid foundation is to a

well-constructed house, a clean surface is to a long-lasting final finish. And, remember, it is better to be on the safe side. Get those surfaces both physically and chemically clean of all grease, grime or other contamination—visible and invisible. In that way you will be assured that you've made the right start to the right finish.

Today, thanks to the many improvements and refinements in mechanical and chemical surface-cleaning and conditioning techniques available to industrial finishers, there is no longer any sound excuse for sub-standard results in product coating operations because of ineffectual removal of surface contaminates from the work. Whether you clean those parts by abrasive-blasting, solvent degreasing or alkali washing, you can secure the uniformly dependable results you need.

"But my parts-cleaning problem is different", someone says. Perhaps so. If you are in trouble there's an easy way to solve it. No matter how "different" or "special" your problem may be, it will pay you to take advantage of the engineering service maintained by leading equipment manufacturers and materials suppliers.

Their files abound with case histories in which their assistance has successfully solved many other problems—most likely, some of the same are closely similar to yours. Metallurgists, engineers, chemists and researchers of these companies contribute their broad experience and specialized skill to plan every problem and job, as they go about the task of helping you find the right answer to your cleaning problems.

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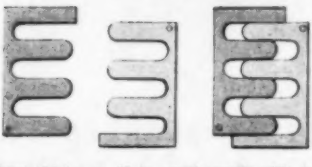
COLOR MATCHING PANELS SAVE TROUBLE, COMPLAINTS



These 8½-in. x 13-in. steel panels with intermeshing fingers actually do make it far easier to match colors.

Paint one panel with your standard color—the other panel with the incoming shipment. Then place panels together, and even smallest differences are quickly discernable. Optical error is avoided.

Used by many large manufacturers of industrial finishes. Get a trial order (3 pairs for $11.00) and see for yourself.

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mation on metal-cleaning and finishing, ranging all the way from transforming rough ideas into definite plans, to the installation of tested, ready-to-operate equipment, methods or materials. They will gladly extend a helping hand. Grasp it and you will be ahead in both time and money.—S.P.A.

Who to Entrust With The "Modernizing" Program

One of our friends writes in a word of caution about some of the individuals who are soliciting and taking on assignments to "modernize" finishing departments. While there are reputable and competent engineers available for this kind of work, our friend declares that there are others who do more harm than good—and they collect high fees for the chaos that they produce. His suggestion is: "Check into their background first." Make sure that the individual or firm you entrust with any modernizing program has a satisfactory background and is thoroughly reliable in every respect.

How Failures Can Help You, and Others Too

Most unpleasant word in the industrial finisher's vocabulary: Failure. Yet he knows that what he learns from his failures is often the ground work for profitable successes. While many finishers will gladly share their achievements with others in the finishing field, they hesitate to admit in print or in public that some of their most promising ideas did not turn out well in practice.

If a finisher has something in

mind for the improvement of his work, he cannot be sure in advance that it's really practical. First he must put it into practice, at least on an experimental scale. This costs time and money, but it is likely to uncover flaws that could not be foreseen. If the results add up to an advance over old methods, he will eagerly tell others about it. But failures he keeps to himself.

You may be reasonably sure of this point: If an idea has looked good to you, it will probably interest other finishers until after they try it out. When you share your experience with them, you help them avoid this loss, and they have more time available for experimenting along more promising lines. This tends to speed up the over-all achievements of the entire finishing industry.

The famous inventor's attitude that failure was only an indication of another thing that would not work, might well be adopted by the foreman or executive in the finishing department. The progressive, inquiring type of mind will run into some things that won't work. Certainly these failures are no disgrace. Shared with others, they simply point out the need for a new approach to the problem.

It always costs a lot of time, effort and money to allow others to make the mistakes about which you could have warned them in advance. The resulting disappointment and discouragement may retard or break the initiative of the man who, otherwise, might work out something which would be of real benefit to other finishers.

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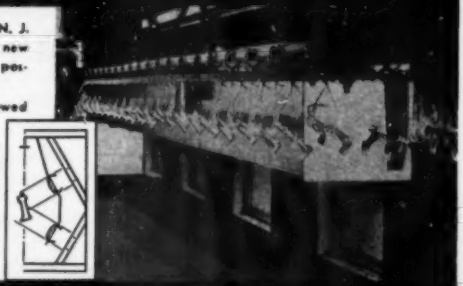

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Naturally, the more extensive and complicated your trial or experiment, the more urgent it becomes to share with the industry what you have learned from failure. Starting from that point, someone else may be able to share with you the results of a success built on knowledge gained from earlier failures.

Fixing Rejects Teaches New Employees

Rejects, like the poor, will always be with us. Some are caused by material failure during processing; some are due to carelessness, with perhaps the largest percentage credited to man-made mistakes. Men who work are bound to make mistakes, especially those whose rhythmical job it is to finish products on a conveyor line.

What is to be done about rejects? Since elimination is impossible, the next best thing is to reduce their number to a minimum. One method is by education of the workers, either through the medium of a company magazine, or by bulletin, short and to the point. Give them actual figures as to cost of rejects at stipulated points in completion of the product, cost of repairs, and loss in production.

Another method is to place the responsibility of reject reduction on groups of employees or on departments, through wage incentive or bonus plans. If a group of workers or an entire department is affected financially through the carelessness of one or two employees, the rest of them will very likely use corrective measures, such as education or persuasion to make them more careful.

Reduction in cost of rejects can be accomplished through frequent and adequate inspection. By this plan, defective products are taken out of production quickly, before more labor and material are expended on them.

One large mid-western manufacturer has put on periodic drives to reduce rejects — with some success. Then he has sought to make the remaining minimum of rejects

pay their way — also with success. This manufacturer does have frequent and adequate inspection. Rejects are removed from the line. Those that call for only minor repairs are handled at repair stations located along the conveyor. Those that require more corrective work are loaded onto a truck and delivered to one of the company's plants located in a small town six miles away.

This plant is known as the school for finishers. Here new employees are trained for spray operators, sanders, inspectors, patchers, and rubbers. Equipment and methods are similar to those in the main plant, except that everything is on a smaller scale. The crew is small enough to permit personal training and supervision. Production is not under severe pressure, because of fewer rejects in the main plant, yet it is sufficient to supply steady work for the small group while they are learning this company's methods. As the workers become more proficient, they graduate from the school, and move over to the main plant to carry on all the better for having learned by correcting other employees' mistakes.

Test Tells if Metal is Really Clean

HOW CLEAN IS clean? That's a $64 question to many industrial finishers, particularly some of the newcomers. A casting or forging may look clean, but is it clean chemically? Is it free of all foreign matter? It is necessary to know this, especially when the cleaned metal is to be given a protective coating.

The easiest way to find the an-

We will purchase and/or have reclaimed paint overspray from water curtained spray booths. Any type paint, enamel or lacquer is acceptable.

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swer to this query, says one leading manufacturer of blast-cleaning equipment, is to make up a saturated solution of copper sulphate (blue vitriol) to which 2% sulphuric acid has been added. This is reported as the simplest of all tests on iron castings, forgings, sheet steel (except stainless), etc.

In passing along this tested tip, the American Foundry Equipment Co. comments: "Use of this solution serves to detect the presence of iron or any form of iron including its alloys, by forming a bright yellow copper coating on the surface of the article or part tested. Where sand, iron oxide, or foreign material is present, the substance either will remain in its original color or may be blackened."

Material suspected of being chemically unclean, metallurgists point out, can be tested in one of two ways: 1) immersing metal in the solution; or 2) swabbing the solution on the metal surface with a swab, such as the type commonly used for painting one's throat. Particular attention should be focused on fillets and cavities in the piece. It is a good idea to renew the solution or to re-dip the swab for each test to be made.—A. P. S.

Make Sure That Fire Extinguishers Are OK

NOW THAT standard fire extinguishers are again available, those responsible for fire protection should examine old and Emergency Approved extinguishers for possible replacement, particularly if equipment has not been frequently inspected and serviced. Many an extinguisher that deserved retirement was kept in service during the war years because new extinguishers were available only to high priority holders. Where first-aid fire protection had to be expanded, even priority holdters often had to be satisfied with Emergency Approved units.

The Inspection Department of the Associated Factory Mutual Fire Insurance Companies now ad-

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vises Factory Mutual Members as follows:

"During the war and consequent curtailment of critical materials, certain substandard fire protective equipment was manufactured as an emergency measure. Now, standard equipment is back on the market, and plants should call for devices with full Factory Mutual approval."

Standard extinguishers bear the Factory Mutual approval insignia (the letters "F.M." superimposed on a diamond-shaped design) and the Underwriters' Laboratories' label, which reads "Underwriters' Laboratories Inspected" and gives the serial number of the label and information regarding the classification of the extinguisher.

The models made of substitute materials which meet the "Emergency Alternate Specifications" of the two laboratories bear the usual approval indications, the letters "EAS," and the year the equipment was manufactured. EAS approval indicates that the unit on which it appears may require more careful maintenance and may not stand up as long as the standard types.—Safety Research Institute.

Hercules Products for Protective Coatings

The numerous Hercules Powder Co. products used in the manufacture of protective coatings are conveniently listed, according to use, in a new 4-page folder. Products are listed under various types of protective coatings in which they are used. Also, brief descriptive matter explains why a specific product is used for the indicated purpose.

Types of protective coatings listed include lacquers, oil varnishes, synthetic-resin-base varnishes, oil paints, bituminous and roof paints, marine paints, japans, ester gum varnishes, natural-resin varnishes, cold-cut and spirit varnishes, interior and exterior water paints, and thinners.

Hercules' address is Wilmington 99, Dela.

How to improve

METAL PRODUCTS

through better finishes

Here is a book that answers all the questions on finishing metal products and shows the methods, techniques, and cost factors in producing them.

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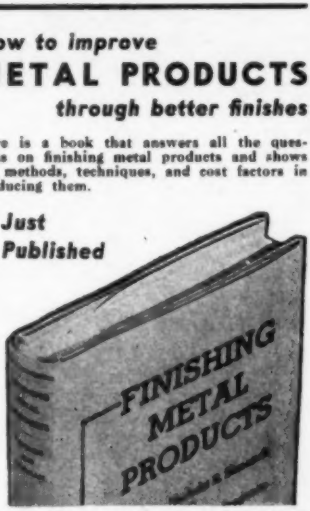

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Covers Finishing from a business and sales standpoint. Deals with methods that improve results and reduce costs. Helps you determine types of finish with greatest sales appeal.

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"Concrete Floor Maintenance Pays Dividends" is the title of a newly published folder which covers the protective maintenance of concrete floors with "Stonhard Stontop," a product of Stonhard Co., 403 N. Broad St., Philadelphia 8, Penna.

This folder explains the action of Stontop in stopping floor "dusting" and protecting a concrete floor against the action of acid, grease, oil and abrasion. Illustrations show the typical problem, solution and result of application.

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